



FRIDAY, SEPTEMBER 16.

New Universal Radial Drill.

The following is a description of a new universal radial drill now manufactured by the Machine Tool Works, Twenty-fourth and Wood streets, Philadelphia, Frederick B. Miles, Engineer, an engraving of which is presented herewith.

The column, which is a single casting 9 ft. high, may be revolved at will, by hand or power, upon a heavy pintle bolted securely to the bed-plate. The base of this pintle is a massive flange of the same diameter as the base of the column, and is fitted with a circular slot in which, when the column is revolved, the bolts that secure its base may traverse. When these bolts are tightened, the column base is thereby effectually united to the bed-plate, and the whole available stiffness of the column, made as above stated in a single casting without joints, is thus utilized. Stiffness is a vitally important point in a radial drill.

As a result of this method of stiffening the column, and also to dispense with extra shaft and gears, the power is conveyed direct from the cone shaft by a spur gear, which encircles the column itself as a journal bearing and engages with the pinion upon the lower end of the upright gear shaft.

The arm, extending 8½ ft. from the centre of the column, can be raised or lowered at will by power, so as to drill either on the bed-plate or up to 6 ft. above it.

The drill carriage can be traversed 5 ft. upon the arm by rack and pinion, and can be swivelled to drill in any direction. As the arm can also be revolved about its own axis by convenient worm gear, these two swivelling functions, combined with the rotation of the column and the raising and lowering of the arm, render the machine universal within its range or scope.

The spindle is counter-weighted and has a vertical traverse of 22 in., either by hand or by power.

The feed gear has three changes of fine feed for drilling and three of coarse for boring—in all, six changes. These can all be instantly varied from one to another, while drilling, simply by revolving an index wheel upon which, for convenience, the degrees of feed are marked. The quick change from coarse to fine feeds, and vice versa, is accomplished by a single motion of the clutch lever; and by this means, not the power feeds alone, but also the hand-drilling motion, may be at once changed from fine to coarse, or the reverse. This affords the quick return by hand. There is also a quick return by power in addition, which effects a rapid motion of the spindle, as required, not only upward, but also downward. It is controlled by a convenient lever, and is always in gear ready for use, as occasion may require. It serves to economize time as well as labor by traversing the spindle in either direction more rapidly than it is possible to do by hand.

The operation of these machines may be witnessed in actual service at the works either of the Holyoke Machine Co., at Holyoke, Mass., or of Mr. D. W. Pond, at Worcester, Mass.

The manufacturers also make a similar machine of a smaller size, namely, with its arm extending 6 ft. from centre of column.

Contributions.

Items Gathered on the Erie.

PORT JERVIS, N. Y.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In its issue of Sept. 13, 1878, the *Railroad Gazette* described and illustrated "an apparatus for lubricating the flanges of the forward locomotive drivers;" and I infer it was from this article that one of the superintendents of the Erie took his cue in fitting up the engines with flange-lubricators. The experiment, however, was not a success. Whether care was taken to follow the directions of the article as to hardening the lubricating material, I cannot say; it is reported that there was entirely too much lubrication of the wheels, caus-

ing them to slip; and thus the experiment ended, so far as the Eastern Division was concerned.

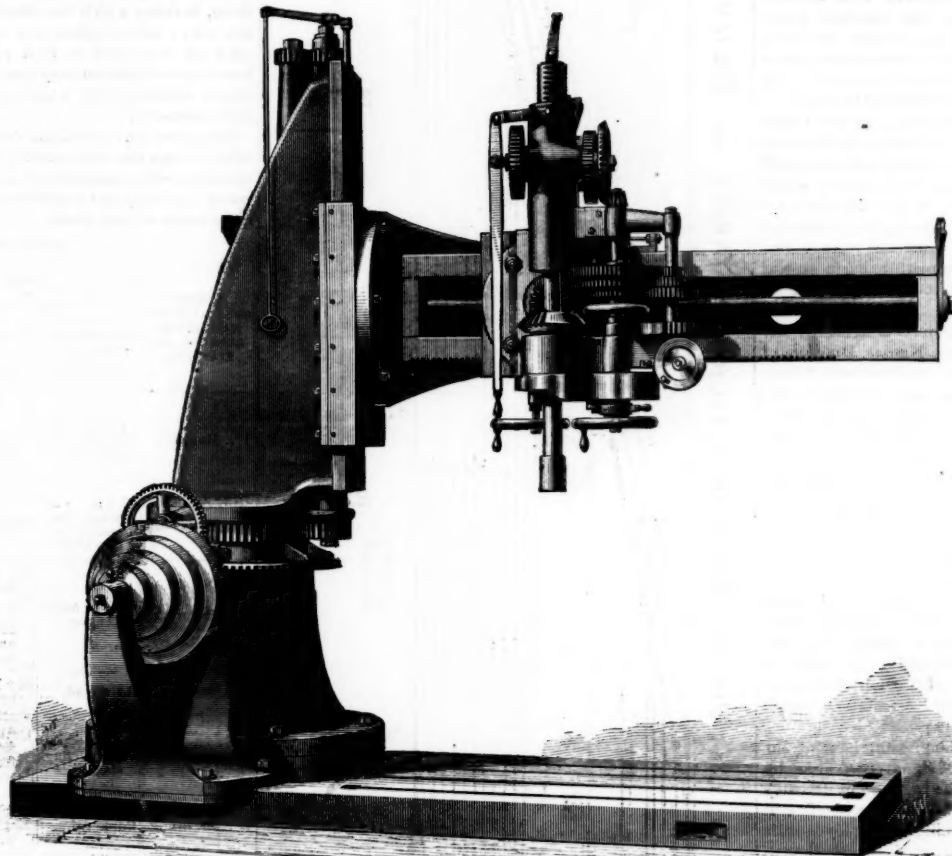
On the Delaware Division the result was quite different. Nearly all its passenger engines are now fitted up with a modified form of the apparatus.

Two lubricators are used, one above each forward truck wheel, lubricating its flange, with a result on curvatures of the track which is said to be excellent. The flange friction, I am told, is materially reduced, and the wearing of the wheel lessened—although about this latter fact I have found some difference of opinion.

EXPERIENCE WITH THE SPEED RECORDER.

The Wythe speed recorder apparatus also has been described in the *Railroad Gazette*, but the Erie's experience with it is worthy of record. It has been in use on the Eastern Division for more than eighteen months.

The recorder is placed in the train caboose, and its key given to the conductor, who is made responsible for the care of the instrument and for the speed of the train. In case, however, the conductor has warned the engineer of an excessive rate of speed, the responsibility is for the time transferred to the latter.



NEW UNIVERSAL RADIAL DRILL.

By the Machine Tool Works, Philadelphia, F. B. Miles, Engineer.

One of the clerks in the train dispatcher's office has charge of the "speed-slips"—strips of paper on which the instrument has left its record—his duty being to "scale" them, and to translate each excessive rate of speed into plain figures. The slips then pass into the hands of the Chief Train Dispatcher, who takes such action in each case as seems advisable. I am informed by the clerk that he can scale about 70 speed-slips in a fairly uninterrupted day, his duty not being confined to this work.

Previous to the use of the recorder, the train regulations allowed a maximum speed of 15 miles per hour for freight trains not under special orders. The actual speed, however, as the recorder has plainly indicated, was any rate below 41 miles per hour; and under its close inspection the regulations as well as the practice were found to be at fault, and the maximum of allowed speed has been increased to 20, and for trains under special orders, to 25 miles per hour. It has taken considerable time and many warnings, even a case or two of suspension, to bring down the maximum rate of actual running time to these larger limits. Warnings are still occasionally necessary, but so much has been accomplished that the little instrument has fairly earned a place as an assistant in train dispatching. No "bad" rear collision has been reported since its adoption.

The following are the speed rates of a train under special orders, allowing a maximum of 25 miles per hour: 25, 32, 30, 27, 35, 23, 25, 32, 26, 32, 40, 30, 30, 32, 25, 32, 28, 30, 27, 25, 26, 32, 23. The conductor of the train was pended.

SAND.

The sand used on the Delaware Division of the Erie is brought from Coney Island, dried in a furnace of not unusual construction, and elevated by a "cold blast" process to a place of storage, from which it can be shot directly into the sand-box of the locomotive. This system requires, of course, an engine to run the fans, and is applicable only to a round-house of considerable capacity; but it is certainly, to say the least, a satisfaction to the eye. There is a distress-

ing appearance of unorganized labor in the laborious efforts of two men filling a tall sand-box from coal scuttles full of sand.

The Coney Island sand has a sharp "grit," and is probably more wearing upon the wheel surfaces than the common article.

CONSOLIDATION ENGINE FLANGES AGAIN.

The wearing of the flanges of the forward drivers of consolidation engines has already been referred to in these letters; but this is an additional reason for putting on record the large experience of the Erie in this matter. While there is some variety in the testimony as to the ultimate causes of the difficulty, it is the experience of at least two divisions of the road that wearing of the flanges of forward consolidation drivers seldom occurs if the truck is "in line." Sometimes the trucks of new engines of this class are found to be carelessly built, one radial bar being somewhat longer than the other. In other cases the truck does not move easily on its swing-centre or the boxes may not be exactly uniform. The wheels of one side of the engine have even been discovered to be somewhat behind their mates on the opposite side. The eye for the centre-pin (in the head of the radial bars) has

been found to be excessively worn on one side. Whatever the ultimate cause of the difficulty, if the truck and both sides of the engine are once put "in line," little trouble is thereafter experienced in the excessive flange friction, even on the Erie curves.

TRAIN ORDERS.

The Erie's system of train dispatching is one in too general use to need description, excepting perhaps that part of it covering train orders. A train order needs to have passed through the following stages, and to bear the enumerated evidences of this fact, before it becomes a complete order. It must have been received from the general office of the division, and must bear the official's initials; it must receive the full signatures of the conductor and engineer, and be redispached to the general office. As a dispatch it bore the number "31"; as a repeated dispatch, it bears the number "32"; as an order accepted by the division office, in the sense understood by the conductor and the engineer, it must now bear also the letters "O. K.," and receiving these letters by order of the division office, it is finally a complete train order. Under this system an order is seldom misunderstood. X. Y. Z.

The Union Pacific Yard at Denver.

KANSAS CITY, Mo., April 22, 1881.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The accompanying sketch of part of the Union Pacific Railroad yards at Denver, Col., is probably so plain as to require little or no explanation.

It comprises in length only about one-fourth of the western part of the yards, but the remainder is mainly built upon the same plan or system, modified only by the necessity of connecting with the round-house and shop buildings. Enough is here given to illustrate what I believe to be the most economic method of utilizing railroad grounds, combined with the best facilities for shifting trains. There is no waste room—buildings can be located in any required position, and can be served readily by tracks on either side. The system can be enlarged or diminished to suit the requirements of any yard, and is possible of almost universal application to property of any shape.

The specific arrangement of some of the tracks shown in the plan is a necessity for the transaction of peculiar business in Denver, but would be useless in St. Louis or Chicago. The general business of either place, however, can readily be arranged under the plan here given.

The system is, briefly, the location of the main lines on the outside, or near the property lines—so as to leave as little interior ground as possible unused—with main diagonal lines crossing at such intervals as will give convenient length to sidings between the diagonals. In the plan shown they are not far from 1,500 feet apart, giving standing room for nearly 40 cars on each siding inclosed. Between Nineteenth street and the east end of the first cluster, there is standing room for about 700 cars on the standard gauge tracks alone, more than 100 of which can be so placed as to be loaded or unloaded by teams.

Switching is done at either end of the cluster, upon a

track laid for the purpose, and there is no necessity for the engine engaged in that work to go out upon the main lines. Trains come in on the main lines and go directly upon the siding designated by the yard-master, the engine uncouples and moves out by either main line to the coal-chute and round-house, neither receiving nor giving hindrance to any other engine or train.

The angle between the parallel lines and the diagonals is 12°. But one pattern of standard-gauge frog—1 in 8½—is used. Main tracks are 15 ft. apart, centre to centre, and all sidings are 12 ft. apart. More transfer tracks between sidings are laid than are shown, but they are uniform in their construction, and can be placed wherever required.

There has been a recent printed account of the new Chicago, Milwaukee & St. Paul yards in Chicago, in which it is stated that all the sidings were built as diagonals, and the main lines as parallels. I wish that company would furnish you a sketch of them. It strikes me that though the plan might be picturesque it would involve leaving more or less unavailable room.

A large part of the Denver yards shown, except the cluster of sidings on the west, is incumbered with narrow-gauge tracks, and with a third rail in the standard gauge tracks—apparently complicating frogs, crossings, transfers, and the like; but in reality the whole is systematized into a very simple thing. These do not, however, interfere with the harmonious working of any and all parts of the yard.

Some difficulty was experienced in building the new tracks upon the site of the old ones, without disturbing the immense business then being transacted. The tracks in the old yards had been horribly laid out—some cross-eyed creature did it in a dark night, I think. They ran in all directions, apparently without aim or object, and buildings were squatted down upon them as if by accident. But the change was made, and a large and constantly-increasing business was taken care of without hindrance either to the work or traffic.

The plans of the new Denver yards were designed by Mr. E. C. Smeed, Resident Engineer of the Kansas Division of the Union Pacific Railway—a great, good-natured fellow, who, I am sure, claims no great merit in the effort, who would undoubtedly feel that he had blundered had he made them otherwise. My own modesty is of an older growth, and not easily shocked in these later years, so as the sketch passes from my hands I give it the stamp of my approval as being in all respects superb! WM. H. CIVER, Assistant Engineer Union Pacific Railway.

Uniformity in Signals.

TO THE EDITOR RAILROAD GAZETTE:

In view of the attempt which will be made on the 20th inst. to establish a permanent association of railway superintendents, the present would seem a fitting time for the discussion of the subject of uniformity in codes of signals, and to recommend this as one of the important questions with which the newly-organized association should deal.

It would be superfluous to urge the pressing need of our railroad system for a standard code of signals used alike by all, for it is too well known that in the past serious disasters have occurred through the want of such a code, and will still continue to in the future so long as railroad employes shift about from road to road, each time doing their best (though sometimes failing) to forget the old and remember the new interpretations placed upon the numerous arbitrary motions of arm or lamp, colors of flags, taps of bells and combinations of whistle blasts which constitute the average signal code of to-day.

Conventions frequently accomplish nothing by attempting too much, and while general uniformity in all the methods of the operating department would be invaluable, such a desideratum should be sought rather by slow but sure steps of progression, beginning at the bottom round. If (which is not such an impossible thing to ask) a majority of the important roads of the country could only agree upon a uniform code of whistle, bell-cord, arm and lantern signals sufficiently detailed to meet every requirement from which each road in the country could select and use such signals, and such only, as each individual manager thought best, with the understanding that all newly-adopted signals should be likewise taken from this code, which should be subject to revision by the association whenever necessary, it would not be long before all the minor roads of the country would be following the lead of the trunk lines, and another step in the same direction could then be still more easily taken.

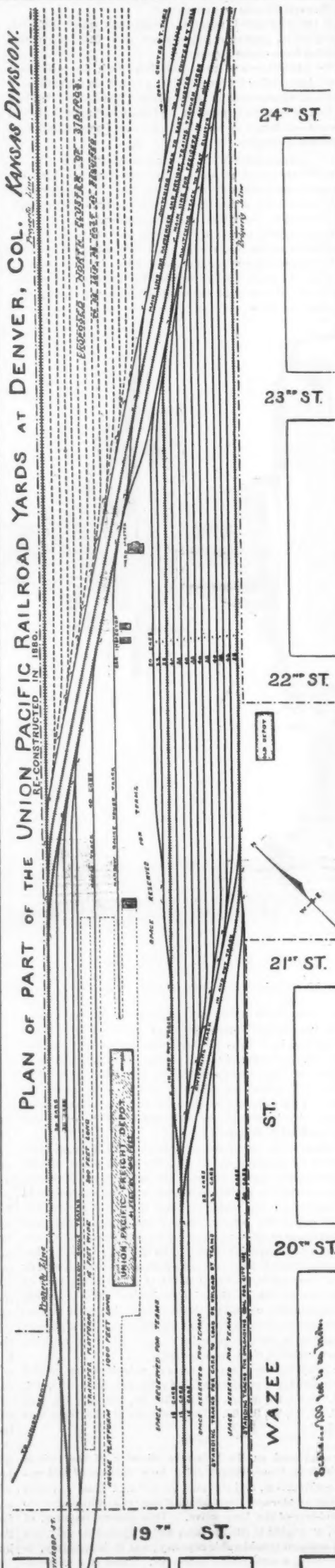
Subjoined are tables which I have prepared showing the whistle and bell-cord signals in use to-day on 36 of our principal roads, representing 39,059 miles, or 42 per cent. of the total mileage and 211,768,546 miles of the total engine mileage of the United States for 1880, and I may in future furnish similar tables of the arm and lantern signals in present use.

It will be observed from these tables that while few roads exactly agree, there is, nevertheless, a substantial uniformity observable throughout, and the problem presented is to frame a new code which shall conform as closely to the average of existing codes as safety and convenience will permit; it being evidently unwise to alter and interfere with existing signals except where absolutely necessary.

In framing such a code, then, the following general principles in the order of their relative importance should be kept in mind:

1. No signal, the misunderstanding of which would endanger the safety of trains, should be permitted to resemble any other in the code.

2. We should, as far as possible conform to existing codes



of signals, and where several systems are in conflict should be guided by the mileage, engine mileage and numerical strength of the roads representing each system.

3. We should preserve, when possible, a close correspondence between the whistle and bell-cord signals.

4. The component parts of each whistle signal should be reduced to a minimum. Simplicity should be studied. Safety demands that this simplicity should increase with the importance of the signal, and convenience requires it to increase with the frequency of the use; hence all signals involving the safety of trains should be short, simple and not easily misunderstood; so likewise with those in frequent use.

5. The code should be sufficiently detailed to answer the requirements of any and every road.

6. The nuisance and annoyance caused by frequency of whistle signals should be reduced to the minimum; therefore road-crossing and station signals and signals to or by passenger trains should be as short as possible.

It is hardly necessary to remark that no code of signals can possibly be framed that will meet all these requirements. The most that can be done is to frame one which will satisfy the greatest number of the most important of them, in doing which the nicest of judgment will be called into play; and therefore it is with some diffidence that I offer my own views as to a proper system for adoption, knowing well that such system must be the work of many minds, developed by a process of evolution from criticism and discussion.

Subjoined is a code of bell-cord and whistle signals which, while it does not substantially depart from existing codes, conforms with reasonable closeness to the requirements already specified, and is sufficiently elaborate to meet the requirements of most roads.

PROPOSED CODE.

NUMBER OF BLASTS OR TAPS GIVEN RUNNING OR STANDING.	SIGNIFICATION OF SIGNALS.		
	Corresponding.		Not corresponding
	Bell-cord Signals, Conductor to Engineer.	Whistle Signals, Engineer to other Employés.	
1 .. Running.	Train has parted, stop with care.	Stop at once; apply brakes.	Signal for highway crossing, station drawbridge, road crossing, or answer to a flagman with signals.
1 .. Standing	Send out head flagman to protect train.	Change switch.	Signal after stopping and before crossing bridge or railroad at grade.
2 .. Running.	Stop at once, danger.	(1) Release the brakes. (2) Answer to conductor's bell-cord signal to stop at next station.	Call for block signals.
2 .. Standing	Go ahead.	Release the brakes.	Call for block signals.
3 .. Running.	Stop at the next flag-station.	Call attention to signals carried for a following train.	(1) Call for switch on approaching a station. (2) Train is to take side track.
3 .. Standing	Back up.	Engine or train will back.	Send out rear flagman to protect train.
4 .. Running.	Reduce speed.	(Blank.)	(Blank.)
4 .. Standing	Call in the rear flagman.	Rear flagman will return to his train.	(Blank.)
5 .. Running.	(1) Resume scheduled speed. (2) No passengers for flag station.	(Blank.)	(Blank.)
5 .. Standing	Call in the head flagman.	Head flagman will return to his train.	(Blank.)

Additional Signals by Whistle.

1. Long, short, and long (— — —), letter k of Morse alphabet, signifies that the train has parted.

2. Short, long, and short (— — —), letter f of Morse alphabet, given on approaching a fuel station.

3. Long and three short (— — —), letter b of Morse alphabet, is a warning to brakemen that train is approaching a covered bridge or tunnel.

4. Succession of short blasts (—) is an alarm for cattle upon the track, and a warning to train men of danger ahead.

5. Short and long (— —), letter a of Morse alphabet, signifies air-brake don't work—make station stop with hand-brakes.

Now without elaborating too much, I wish to call attention to a few reasons for preferring the signals given above.

On many roads one tap of the bell signifies stop; but since the parting of the train produces one tap of the bell, if an engineer should at once apply brakes a collision between the two detached portions of the train would be unavoidable. Hence on such roads the engineers are generally instructed to first ascertain whether or no the train has parted before applying the air-brake. Now in doing so a little time is necessarily consumed before the signal can be obeyed; but in case of emergency every moment is precious. Hence a number of roads, as for instance the Pennsylvania, the Louisville & Nashville, the Wisconsin Central, and the Chicago, St. Louis & New Orleans assign to one tap of the bell, given while running, the meaning, "Train has parted; stop with care." And to two taps, given while running, the meaning "Danger! Stop at once!" selecting the latter signal, because it is the next shortest signal available, time being an impor-

TABLE OF WHISTLE SIGNALS IN USE ON THE PRINCIPAL RAILROADS OF THE UNITED STATES

NAME OF ROAD.	Mileage.	Engine mileage, 1880.	Stop, apply brakes.	Go ahead, off brakes.	Engine will back.	Stop by hand-brake at stations where air brakes do not work.	Answer to bell-cord signal of conductor to stop at next station.	Train has parted.	Alarm for cattle on track and danger ahead.	Call in rear flagman.	Call in head flagman.	Flagman will go back and protect train.	Given by trains carrying signals as they pass other trains.	Engineer's call for block signals.	Change switch.	Call for a switchman.	Train is to take a side track.	Engine will take on fuel.	Signal for road crossing.	On approaching stations, road crossings and draw-bridges.	Answer to flag shown by flagman.	Train is approaching a tunnel or covered bridge.
Atchison, Topeka & Santa Fe.	1,765	3,780,282	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Baltimore & Ohio.	1,554	9,025,589	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Boston & Albany.	382	5,450,729	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Boston & Providence.	67	814,923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Central of New Jersey.	544	8,771,025	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	Briefly.	—	—
Central Pacific.	2,654	8,650,451	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	5 sec.	—	—
Chicago & Alton.	840	4,123,503	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chicago & Northwestern.	2,798	12,789,566	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	5 sec.	—	—
Chicago, Burlington & Quincy.	2,772	8,243,586	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 sec.	—	—
Chicago, Rock Island & Pacific.	1,348	8,948,036	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	5 sec.	—	—
Chicago, St. Louis & N. Orleans.	571	not given	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Chl. St. Paul, Minn. & Omaha.	903	not given	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Chicago, Milwaukee & St. Paul.	3,803	10,985,983	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	10 sec.	—	—
Clev., Col., Cin. & Indianapolis.	471	4,559,020	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Georgia.	307	1,137,136	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hannibal & St. Joseph.	292	1,995,739	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	2 sec.	—	—
Illinois Central.	1,320	6,513,611	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lake Shore & Mich. South.	1,177	13,586,209	—	—	—	—	—	—	i. & p.*	—	—	—	—	—	—	—	—	—	—	—	—	—
Lehigh Valley.	313	4,646,318	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Louisville & Nashville.	1,840	4,351,424	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maine Central.	354	1,287,131	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Briefly.	—	—
Marietta & Cincinnati.	312	2,358,000	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Michigan Central.	803	7,000,067	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Missouri Pacific.	1,537	2,732,412	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
New York & New England.	462	1,902,113	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 sec.	—	—
New York Central & H. R.	1,018	22,222,777	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
New York, Lake Erie & Western.	1,010	14,283,876	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 sec.	—	—
N. York, N. Haven & Hartford.	202	2,462,832	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
New York, Pennsylvania & Ohio.	557	8,694,900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ohio & Mississippi.	615	not given	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Pennsylvania.	1,120	17,084,881	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Philadelphia & Reading.	846	11,511,156	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
St. L., Iron Mountain & South.	684	4,175,185	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Union Pacific.	1,820	not given	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Wabash, St. Louis & Pacific.	2,479	not given	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Wisconsin Central.	480	1,019,487	—	—	—	—	—	—	s. s. b.	—	—	—	—	—	—	—	—	—	—	—	—	—
Total.	39,059	211,768,546	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Proposed Code.	—	—	Running	Standing	Standing	Running	Running	Running	Running	Standing	Standing	Standing	Running	Standing	Standing	Running	Running	Running	Running	Running	Running	Running

- Signifies a short blast. — Signifies a long blast. s. s. b. Signifies a succession of short blasts. * Irregular and prolonged. Con. and contin. signifies continuous. Sec. signifies seconds.

tant element. Now a few of these same roads, as for example, the Chicago, St. Louis & New Orleans, adopt two taps given while standing as the go-ahead signal; and while there is thus some resemblance between the stop and go-ahead signals, there is no good reason for confusing the two signals, the case being similar to the single stroke of bell used on all street railway lines. Nevertheless, another class of these same roads, and among them the Pennsylvania, prefer one tap for the go-ahead signal; but since in this case there results a flat contradiction instead of correspondence between the bell-cord and whistle signals for go ahead, I prefer the two-tap signal for go ahead, which avoids the difficulty by preserving correspondence between bell-cord and whistle, besides conforming more closely to existing practice.

On roads where one tap means "stop" and two "go ahead," irrespective of whether train be standing or running, the two-tap signal answers also for "resume schedule speed;" but where two taps running signifies stop at once a separate signal is required for "resume schedule speed," and this being of infrequent use, I have assigned it to five taps of the bell.

Use has quite generally sanctioned the employment of as many as five taps of bell or blasts of whistle; but four long blasts and five short blasts are about as many as can well be used if prolonged use of the whistle or extreme complication of signals are to be avoided; and this principle is already recognized by the many roads which have resorted to the Morse telegraphic alphabet for new whistle signals, and this it seems to me, is, under the circumstances, the best thing to be done.

The long blast of the whistle I consider under all circumstances the most appropriate general signal for approaching or leaving stations, for highway crossings, drawbridges, grade crossings and similar uses, for it can be prolonged to almost any required duration and be still modified to suit all the varied local restrictions which cities and large towns are so ready to place upon what they term the "whistle nuisance." And the length can be varied for bridges and stations if a distinction be desired, all without in any way interfering with that uniformity for which we should strive, which is true of scarcely any other signal in the code.

The five short blasts, which on the New York, Lake Erie & Western Railroad signifies "fuel" and on the Central Pacific signifies "bridge or tunnel," would be confused with the recall signal for head flagman, and I have therefore assigned to these signals their initial letters as per the Morse telegraphic alphabet.

Thresh-olds blasts are preferred to five as a signal given by engines carrying signals for following trains on account of the annoyance caused to passengers and inhabitants along the line by continuous sounding of the whistle.

The remaining bell-cord and whistle signals for the most part confirm closely to prevailing practice, and no further special comment is now deemed necessary.

In general it will be observed that the code is framed in accordance with the rules already laid down as closely as, in my judgment, the circumstances of the case will permit, and such as it is I leave it for discussion, trusting that even if my ideas do not meet the entire approval of the profession the little I have done will at least be of service in calling attention to the utter lack of system and uniformity now prevailing in this quarter, and to the urgent need for

BELL-CORD SIGNALS.

NAME OF ROAD.	Stop.	Start.	Back the train.	When running, stop at next station.	Look out and ascertain that train has not parted before applying brakes.	Warning while running that train has parted.	Running too fast; run slower, slacken speed.	Call in flagman.	No passengers for the next flag station.	Resume schedule speed.	Send out head flagman.
Atchison, Topeka & Santa Fe.	1	2	3	—	—	—	—	—	—	—	—
Baltimore & Ohio.	1	2	3	—	—	—	—	—	—	—	—
Boston & Albany.	1	2	3	—	—	—	—	—	—	—	—
Boston & Providence.	1	2	3	—	—	—	—	—	—	—	—
Central of New Jersey.	1	2	3	—	—	—	—	—	—	—	—
Central Pacific.	1	2	3	—	—	—	—	—	—	—	—
Chicago & Alton.	1	2	3	—	—	—	—	—	—	—	—
Chicago & Northwestern.	1	2	3	—	—	—	—	—	—	—	—
Chicago, Burlington & Quincy.	1	2	3	—	—	—	—	—	—	—	—
Chicago, Rock Island & Pacific.	1	2	3	—	—	—	—	—	—	—	—
Chicago, St. Louis & New Orleans.	1	2	3	—	—	—	—	—	—	—	—
Chicago, St. P., Minneapolis & Omaha.	1	2	3	—	—	—	—	—	—	—	—
Chicago, Milwaukee & St. Paul.	1	2	3	—	—	—	—	—	—	—	—
Cleveland, Col., Cin. & Indianapolis.	1	2	3	—	—	—	—	—	—	—	—
Georgia.	1	2	3	—	—	—	—	—	—	—	—
Hannibal & St. Joseph.	1	2	3	—	—	—	—	—	—	—	—
Illinois Central.	1	2	3	—	—	—	—	—	—	—	—
Lake Shore & Michigan Southern.	1	2	3	—	—	—	—	—	—	—	—
Lehigh Valley.	1	2	3	—	—	—	—	—	—	—	—
Louisville & Nashville.	1	2	3	—	—	—	—	—	—	—	—
Maine Central.	1	2	3	—	—	—	—	—	—	—	—
Marietta & Cincinnati.	1	2	3	—	—	—	—	—	—	—	—
Michigan Central.	1	2	3	—	—	—	—	—	—	—	—
Missouri Pacific.	1	2	3	—	—	—	—	—	—	—	—
New York & New England.	1	2	3	—	—	—	—	—	—	—	—
New York Central & H. R.	1	2	3	—	—	—	—	—	—	—	—
New York, Lake Erie & Western.	1	2	3	—	—	—	—	—	—	—	—
New York, New Haven & Hartford.	1	2	3	—	—	—	—	—	—	—	—
New York, Penn. & Ohio.	1	2	3	—	—	—	—	—	—	—	—
Ohio & Mississippi.	1	2	3	—	—	—	—	—	—	—	—
Pennsylvania.	1	2	3	—	—	—	—	—	—	—	—
Philadelphia & Reading.	1	2	3	—	—	—	—	—	—	—	—
St. L., Iron Mountain & Southern.	1	2	3	—	—	—	—	—	—	—	—
Union Pacific.	1	2	3	—	—	—	—	—	—	—	—
Wabash, St. Louis & Pacific.	1	2	3	—	—	—	—	—	—	—	—
Wisconsin Central.	1	2	3	—	—	—	—	—	—	—	—
Proposed Code.	2	2	3	3	1	4	5	5	5	1	1

Immediate action looking toward a speedy and radical reform. EDWIN A. HILL.

New Haven, Sept. 10, 1881.

Free Canals.

The people of this state are invited to choose members of the Legislature partially with a view to their opinions on a proposed constitutional amendment declaring that transportation on the canals shall be free. At first sight this seems to be a proposal to throw away a revenue. The state has invested a large sum and incurred considerable debt in constructing the canals, and must, on any plan of continuing state management of them, be at expense for repairs and superintendence. Why should they not earn moderate tolls for the State Treasury? This question is complex and difficult. It has many aspects. Among the considerations bearing on it is the importance of retaining for New York at least as much as may be of the carrying trade between the Northwest and Europe.

Wonderful progress has been made during the last decade, in the development of agriculture in the Northwest. Few persons realize it. Look upon any map of Dakota, Minnesota and Wisconsin. Here is a region, long under-valued and neglected, but now blossoming in immense wheat farms. Its plains and prairies—level, stoneless, rich—admit the use

of agricultural methods and machinery such as the Eastern and Middle States do not witness. A dozen plows start side by side and travel an hour—nay, two—before the end of the furrow is reached and they commence a return. The seed is sown and the crop in due time is reaped by machines which do their work with a rapidity and accuracy wholly unthought of upon old-time methods. The yield is proportionally great and is increasing. A large portion is needed in Europe. With every year foreign lands are buying more of American produce. An important part of the wealth of our people must be derived, for a generation to come, by raising wheat and beavers in the Northwest for sale in Europe.

The chief channels of transportation for Northwestern produce destined abroad have in past years been through New York state, and the Erie Canal has rendered important aid. Years ago, when the Hither-West was doing on a smaller scale what the Far West is doing now, it was a step of great foresight and wisdom which New York took in building the canal. To throw the canal open, now, may be as wise and helpful a measure for retaining the carrying trade as building the canal was for winning it. To New York state, and especially to New York city, the retaining of this trade is important; and not merely for the sake of the wages and profits derived from American produce as it crosses the state and goes abroad, but also, and even more, by reason of the return commerce. The ships which carry

abroad the products of this country come back laden with European manufactures and products. They naturally return to the ports whence they sailed, for they are needed there to be again filled for another outward voyage. If the policy of New York is such that the shipments of grain are deflected to Philadelphia, Boston and Portland, the immediate consequence will be that our imports from Europe will in about the same proportion enter the country through Portland, Boston and Philadelphia. New York cannot neglect her export trade and expect to retain her importations.

The march of improvement in the navigation of the Mississippi and the St. Lawrence rivers is developing a possibility that those channels may become competitors with New York for the transit of Northwestern products. It has long been an ambition of Canada, a dream of Southern projectors, to evade by canals the falls and rapids which obstruct an exit by the lakes and the St. Lawrence, to dredge the deposits and root out the snags which hinder the passage of the Mississippi, and to offer to carry Western produce abroad by vessels on these waters cheaper than can be done by the costly artificial works—the canals and railroads—which cross New York state. Progress has been made in both directions. Captain Eads has opened the mouths of the Mississippi, and before many years the lakes and the St. Lawrence will be made equivalent to a free canal for carrying the Northwestern produce, and the return shipments of European goods. Both are roundabout ways, it is true, but cheaper, all things considered, than through New York under a toll system. Will this state wait for such competition? If she does she may come to regret that she did not declare her canals free while there was yet time.—*New York Tribune*.

The Bids for the Cincinnati Southern.

The following is the report submitted by the Auditor, Mr. H. H. Tatem, to the Trustees of the Cincinnati Southern on the value of the bids made for the lease of the road. It covers eight bids (three in alternative form by the same parties), the others, we believe, having been set aside for informality:

Conformably to your instructions I have prepared, and herewith respectfully submit, computations of proposals Nos. 1, 2, 4, 5, 7 and 9, received by your board for the lease of the Cincinnati Southern Railway. These computations have been made on a basis of:

First—Four per cent. compound interest, quarterly, semi-annually and annually.

Second—Five per cent. compound interest annually.

Third—The present value of the bids computed at 4 per cent. per annum, simple interest.

As the terms of the contemplated lease require the rental to be paid quarterly, I have computed the bids for quarterly returns, more to show possible revenues than the amount which will actually accrue to the city, as I presume the investment by the city of the rental received, so as to produce such results, in a measure at least, impracticable.

I submit table showing results, calculated for semi-annual returns, as more nearly representing the actual results the city will realize.

The table showing annual returns at 4 per cent. compound interest is submitted more for the reason that all of the many calculations of the bids which have appeared in the daily papers have been similarly figured, than because I believe it the correct method of computing and comparing the bids.

While these several calculations produce results varying materially in the aggregates, the relative difference between the respective bids is of course the same. Recapitulated, these three tables exhibit as follows:

COMPUTATION AT 4 PER CENT. COMPOUND INTEREST.

No. of bids.	Names of bidders.	Quarterly.	Semi-annually.	Annually.
1	L. & N. R. Co.	\$31,208,113	\$31,643,209.51	\$30,523,171.62
2	Cin. R. R. Co.	35,521,554	35,259,414.48	34,748,584.02
3	R. G. Huston & Co.	39,182,701	38,888,506.67	38,315,536.89
4	G. F. Doughty & As's, 1.	39,475,736	39,027,080.26	38,600,518.55
5	Same, 2.	38,960,341	38,705,366.22	38,149,903.68
6	Same, 3.	40,089,953	39,791,948.08	39,325,088.99
7	Fred. Wolfe.	41,160,507	40,849,623.01	40,244,054.53
8	E. T. Va. & Ga. R. R. Co.	38,300,769	38,019,843.88	37,472,380.77

I also present a table showing recapitulation of results of each bid for each period of five years of the term of the proposed lease, computed at 4 per cent. compound interest—quarterly, semi-annually, and annually.

The calculation of 5 per cent. compound interest was made because of the fact that the average interest on the market value of the bonds issued for the construction of the road will more nearly approximate 5 per cent. than 4 per cent., but it will be seen from the table that the relative rank of the different bids will not be affected by this change in the rate per cent. Recapitulated, this table shows as follows:

Names of bidders.	Aggregate.
1. L. & N. R. Co.	\$12,779,341.55
2. Cincinnati R. R. Co.	14,734,309.32
3. R. G. Huston & Co.	16,126,403.74
4. Geo. F. Doughty and Asso. (1).	16,234,910.45
5. Same (2).	16,259,131.44
6. Same (3).	16,764,516.62
7. Fred. Wolfe.	16,895,991.72
8. East Tenn., Va. & Ga. R. R. Co.	15,943,792.36

The table showing the present value of the bids represents the sums which, at 4 per cent. simple interest, will produce the amount of rental offered by the various proposals at the time the respective installments mature.

It will be seen from this table, also, that the relative rank of the different bids, as shown by the other tables, is not affected by this computation. Recapitulated, this table shows as follows:

Names of bidders.	Aggregate.
1. L. & N. R. Co.	\$12,779,341.55
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8. East Tenn., Va. & Ga. R. R. Co.	15,943,792.36

The calculations for these several tables were made by Prof. Jacob H. Bromwell, of the Hughes High School, whose services in this regard I desire to acknowledge, as much for the great favor it conferred and assistance it rendered, as for the confidence it will insure for the accuracy of the computations.

THE SCRAP HEAP.

Locomotive Building.

There is some talk of starting a locomotive shop at South Chicago or Pullman, but parties who are working up the

project do not wish to give any definite information at present.

The Hinkley Locomotive Co. in Boston last month turned out 12 locomotives. About 750 men are employed, and part of the shops are running over-time.

The new buildings of the Canada Locomotive Works at Kingston, Ont., are nearly ready for use. The works are building eight engines for the Credit Valley road.

Ground has been bought for the locomotive shops which are to be built at Hochelaga, near Montreal, by the Canadian Pacific syndicate.

Car Notes.

The Lehigh Car & Axle Works, at Stemton, Pa., are running over-time to fill some pressing orders.

The Brownell & White Car Co., in St. Louis, is enlarging its works, and will soon be able to turn out one street car a day.

The New Albany Forge, at New Albany, Ind., is turning out 100 car axles a day, and has five steam hammers at work.

C. W. Pickering & Co., in Philadelphia, are full of orders and are working full time on car springs, with a good demand also for locomotive springs.

The Union Pacific shops at Omaha, Neb., are building 9 baggage and 12 caboose cars for the road, a number of narrow-gauge freight cars for the Colorado Division and 20 box cars for the Nevada Central. The car shops are being enlarged by an erecting shop 180 by 800 ft. in size.

The American Brake Co., of St. Louis, has increased its capital stock and intends to go largely into the manufacture of its freight train brakes.

The New York & New England shops at Norwood, Mass., have completed 200 box cars for the road.

The Gilbert Car Works, in Buffalo, N. Y., have contracts for a number of box cars for the Northern Pacific, 33 ft. long, for carrying lumber; also for 25 narrow-gauge box cars for the Bradford, Eldred & Cuba road.

The Gilbert & Bush Car Co., in Troy, N. Y., is building three passenger cars for the Credit Valley road.

Bridge Notes.

The Wallis Iron Works, of Jersey City, N. J., are building a wrought-iron highway bridge 400 ft. long at Passaic, N. J., and are at work on bridges for Rahway and Boonton, N. J. They have just completed three bridges for the Coney Island Elevated Railroad. The shops, which are quite extensive, are full of work.

Work is to be begun on the Louisville & Nashville's bridge over the Ohio at Henderson, Ky., as soon as the government engineers have approved the location. The bridge will be 100 ft. above low-water mark, and will have a draw-span with two 71 ft. openings on the Indiana side of the river, a channel span of 500 ft. near the Kentucky side, and several fixed spans of 160 ft. each.

Iron and Manufacturing Notes.

The Pittsburgh Forge & Iron Co. has just put in a new steam hammer, making the fifth now in use.

The Saucier Iron Co., at Bingen, Pa., is preparing to put an additional furnace in blast.

In Southwest Virginia eight charcoal furnaces—Reed Island, New River, Cedar Run, Walton, Raven Cliff, Beverly, Ironside and Speedwell—are in blast. Brown Hill, Eagle, Wythe and White Rock furnaces are preparing to go into blast. Barren Springs furnace is out of blast and not likely to start up at present.

Quinnimont Furnace, at Quinnimont, W. Va., was to go into blast this week, having been relined and repaired.

The new rail mill at Homestead, near Pittsburgh, was started up Sept. 1. It is to be operated in connection with the works of the Pittsburgh Bessemer Steel Co. The Superior Mill in Allegheny, which is owned by the same parties, will hereafter be used in making bridge and shape irons, the rail business being removed to the new mill.

The New Albany (Ind.) Rolling Mill has recently been enlarged and is now turning out about 120 tons of rails, 10 tons of fish-plates and three tons of spikes per day. The mill will soon begin running double turn.

The Standard Tool Co., of St. Louis, is adding a steam forge to its works.

Low Moor Furnace, in Allegheny County, Va., is in blast and making about 70 tons of pig iron a day.

Buffalo Gap Furnace, in Augusta County, Va., is being repaired and put in readiness to start up.

Grace Furnace, at Ferrol, in Augusta County, Va., is in blast. It is a small furnace, making 15 tons of iron a day, and is owned by the Pennsylvania & Virginia Coal & Iron Co.

Callia Furnace, in Botetourt County, Va., has been obliged to go out of blast, the water supply having failed.

P. H. & F. M. Roots, at Connorsville, Ind., are running their shops night and day on their patent blowers, to keep up with their orders.

The Rail Market.

Steel rails are active and there is an urgent demand for fall deliveries, which are very difficult to secure. Quotations are \$60 to \$62.50 per ton at mill for fall and \$58 to \$60 for next year's deliveries. Makers are reported as not anxious to close contracts at present prices, believing that they will be higher next year. English steel rails are quoted at about \$60 to \$62.50 according to time and place of delivery. Large sales are reported for the Canadian Pacific and for California and Oregon deliveries.

Iron rails are more quiet, with many inquiries reported but few actual sales. Quotations are about \$47.50 to \$48 per ton at mill for heavy sections up to \$50 to \$52.50 for light rails.

Heavy sales of railroad spikes are reported at \$2.80 and \$2.85 per 100 lbs. Fish-plates continue to be quoted at \$2.40 to \$2.50 per 100 lbs., and track-bolts \$3.25 to \$3.75, with an active demand and an upward tendency.

Steel blooms are active and are quoted at \$43 to \$44 per ton, duty paid. Negotiations are said to be pending for several large lots.

Old iron rails are firmly held, but few sales are reported, buyers hoping for a decline. Philadelphia quotations are \$27.50 to \$28 per ton for T-rails and \$30 for double-heads.

Hauling Water on the Pennsylvania Railroad.

The lower shops have been greatly inconvenienced since the drought has set in to procure an adequate supply of water for the steam boilers driving the machinery. The water is brought in from Canan's station, on the Hollidaysburg Branch road, nearly five miles distant from the shops, in oil tanks. The tanks are first filled with sawdust and burned out so as to destroy the oil remaining in them, as an engine will not make steam when the water has a mixture of oil in it. These tanks hold from 3,500 to 3,600 gallons. There are eight of them now in use. The train goes out with four empty tanks and brings in four full ones, and is run night and day. Two trips are made in daylight and two at night, bringing in from 14,000 to 15,000 gallons each time, or about 60,000 gallons in 24 hours. It takes 45 minutes to pump one of these tanks full. The water on its arrival at the lower shops is pumped into the three large tanks that surmount the hill north of the shops on the road leading to Blair Furnace. By this means the company has

been able to keep the works in motion.—*Altoona (Pa.) Sun*, Sept. 9.

A Runaway Train.

On Sunday evening, about 9 p. m., while a train of eight carriages were being shunted at Halstead Station, on the Southeastern Railway, near Seven Oaks, it started down the incline on the road to London without the engine. It continued its course, increasing its speed as it ran through Chelsfield, Orpington, Chislehurst and other stations. A telegram was sent to all stations, and at the junction above New-Cross the signalman, with great presence of mind, put over the points and sent the train into the sidings to Bricklayers' Arms goods station, where it continued its rapid pace through the network of metals and reached the locomotive department, running into a dead road, knocking down the wall and entering the premises of Messrs. Oastler & Palmer, tanners, doing considerable damage to a wooden building and a quantity of machinery therein. Two carriages were completely smashed, and others were more or less damaged. Five children belonging to the station-master at Halstead had a marvelous escape. They were in a carriage in the centre of the train, and traveled with it to London, receiving a severe shaking, but in no other way being any worse for the adventure. The father followed on the engine which should have been on the train, and it is needless to say that he was overjoyed upon finding his children unhurt.—*London Telegraph*.

Handling Baggage at Philadelphia.

"We have tossed 30,000 pieces of baggage this season," said a smasher on the West Jersey Railroad to a *Record* reporter yesterday, "and yet I am not happy. Of that number at least 20,000 were bound for Atlantic City, and the rest went to Cape May. And there was nothing mean about the trunks either. They were of the same old style, and ranged from the seven-story Saratoga with bay windows down to the little cowhide trunks of the aesthetic young man who travels alone and sucks the end of his cane between stations."

The Camden & Atlantic Railroad Company did not keep a record of the number of trunks in the aggregate carried over that road, but merely held the numbers of the checks, so as to guard against a loss of any piece of baggage. Superintendent Lister said that he thought there were at least 25,000 separate pieces handled in the two months over his road. The men who throw trunks over his road all wear kid gloves, and treat the big bundles about in the same manner as they would babies. They were awfully tender with them.

The Philadelphia & Atlantic City (narrow-gauge) Railroad Company manipulated more than 5,000 trunks during the summer, and so far as heard from none of the men who throw trunks around recklessly lost their lives.

At the depot of the Pennsylvania Railroad Company, at West Philadelphia, during the past few days there have been nearly 3,000 trunks and boxes handled in a day. The appearance of things reminds one strongly of Centennial times, as the trunks are piled up to the second floor, and extra men have to be employed to aid in the work. There are very few trunks that go out of the city that do not weigh at least 100 pounds, and all sorts of tricks are resorted to by travelers to run them through without paying. One of the favorite plans is to find a friend going the same road, and, if you have three or four trunks, get him to secure checks for half of the lot. A veteran baggage smasher, who has grown gray and muscular in the service, says he has seen this trick played by persons who are worth thousands of dollars, preferring to save a few dollars in this way rather than act honestly. Of late years trunks have been so constructed as to stand more knocking about. The average traveling trunk now can be thrown from the top of a car to the ground without disturbing the contents. In bygone years, before the fiend became expert, such an experiment would have resulted in collapse.—*Philadelphia Record*.

Rich and Poor.

Practice makes perfect: It was at a railway station. The trains were being made up. Puff went the locomotives, whirl went the wheels and the whistling was terrific. There was backing and forwarding and all manner of shunting on a labyrinth of rails. "What the deuce are they doing?" "Practising for an accident."—*Parisian Pleasantry*.

A railroad company in Massachusetts has a treasurer named Poor, while the treasurer of a New York company is named Rich. This tends to show that in New York they have a livelier sense of the fitness of things than in Massachusetts.

The projectors of some of the new railroads now under way would do well to ponder the remarks made some years ago by a stockholder in a Connecticut road. "You see," he said, "we knew you could not go from L— to D— without riding all around the country, and changing cars three or four times. We made up our minds to build a road straight across country, so we chipped in and built it, and then, by gosh! we found out that nobody ever did want to go from L— to D—. And then—we bustled."

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Connecticut & Passumpsic Rivers.

The company owns a road from White River Junction, Vt., northward to the Canada line at Derby Line, 110.3 miles; it leases the Massawippi road, from Derby Line to Sherbrooke, P. Q., 34.7 miles, with a branch to Stanstead, 2 miles, making 147 miles worked. The report is for the year ending June 30.

The company also owns the Newport & Richford road, from Newport, Vt., to Richford, 32 miles, and that road is worked by the Southeastern (of Canada), as part of its main line.

The equipment consists of 28 engines; 15 passenger and 10 baggage and mail cars; 520 box, 100 stock, 440 flat and 9 caboose cars; 3 crane cars and 2 boarding cars.

The general account, condensed, was as follows:

Stock (\$20.348 per mile).....	\$2,244,400.00
Bonds (\$13.600 per mile).....	1,500,000.00
Notes payable (\$2.286 per mile).....	250,000.00
Newport & Richford bonds.....	350,000.00
Lyndon lands.....	31,934.12
Coupons and dividends unpaid.....	8,177.65
Reserve.....	250,250.28
Earnings.....	57,352.57
Total.....	\$4,692,014.57
Construction (\$31.881 per mile).....	\$3,518,525.29
Newport & Richford R. R.....	350,000.00
Southeastern Ry.....	100,000.00
Notes receivable.....	335,000.00
Stocks, lands, etc.....	41,795.21
Cash and receivables.....	56,085.19
Steel rails.....	84,700.15
Cashier, including materials.....	207,818.73
Total.....	\$4,692,014.57

During the year the stock was increased \$68,700; bonds outstanding were increased \$63,500, and notes payable decreased \$127,008.57. Construction account increased \$68,700. The Newport & Richford road and its bonds appear in the accounts for the first time. The company pays interest on \$400,000 Massawippi 6 per cent. bonds, and also the same dividends on Massawippi stock as are paid on its own stock.

The earnings for the year were as follows:

	1880-81.	1879-80.	Increase.	P. c.
Passengers.....	\$242,649.39	\$238,463.52	\$4,185.87	6.2
Freight.....	445,016.53	395,747.58	49,268.95	21.4
Mail and express.....	28,411.44	26,800.20	1,611.24	6.0
Rents and interest.....	59,072.16	36,536.68	22,535.48	61.8
Total.....	\$774,146.52	\$691,547.98	\$82,598.54	17.7
Expenses.....	462,981.61	431,408.17	31,573.44	7.3
Net earnings.....	\$311,164.91	\$260,139.81	\$51,025.10	37.6
Gross earn. per mile.....	5,393.30	4,473.12	920.18	17.7
Net.....	2,116.77	1,538.37	578.40	37.6
Per cent. of exps.....	59.81	65.61		

The increase in earnings was very large and was due chiefly to the larger freight traffic, although rates were lower. There was a large increase in interest received.

The result of the year was as follows:

Net earnings, as above.....	\$311,164.91
Interest on bonds and notes.....	\$135,085.00
Other interest.....	9,175.87
Dividends, 5 per cent.....	130,701.00
Total.....	\$275,561.87
Surplus for the year.....	\$35,603.04
Surplus from previous year.....	8,830.17
Premium on bonds sold.....	12,819.31
Total surplus, June 30, 1881.....	\$57,212.52

A dividend of 2 per cent. was paid in February, 1881, and one of 3 per cent. in August, 1881, from the earnings of the year. Interest and dividends include those on Massawippi stock and bonds.

The traffic for the year was as follows:

	1880-81.	1879-80.	Inc. or Dec.	P. c.
Train mileage.....	275,039	250,643	24,396	9.9
Passenger.....	223,720	184,358	39,362	21.0
Freight.....	26,403	5,077	21,326	420.1
Total.....	525,171	440,078	85,093	19.9
Passengers carried.....	176,313	156,934	19,379	12.3
Passenger miles.....	6,117,700	6,174,878	57,178	0.9
Tons freight carried.....	308,935	219,604	89,331	40.7
Ton miles.....	19,726,662	13,670,452	6,056,210	44.4
Av. train load:				
Passengers, No.....	22.24	23.79	D. 1.55	6.5
Freight, tons.....	88.17	74.15	I. 14.02	18.9

The tonnage of the road shows a very large increase, chiefly carried at lower rates than heretofore.

During the year there has been added to the equipment of the road 140 freight cars, costing \$68,700, which have been paid for by the sale of 687 shares of stock, making the whole stock now issued 24,444 shares. Locomotives and other stocks, as well as the stations, etc., have been kept in excellent repair, \$8,543 having been expended upon the joint passenger station at White River Junction. The gravel train has been run more than two months since the opening of spring in ballasting the road, 1,500 tons of steel rails have been laid in the track, 5,784 rails taken up, welded and relaid, and 86,290 new ties have been put into the track during the year. Workmen are now laying 2,000 tons of steel rails, which will go into next year's account; when these are all laid there will be only about 15 miles more to be laid to furnish continuous steel rails from Newport to Wells River, where the heaviest traffic passes, and more than one-half of the Massawippi road will also have steel rails. The report concludes as follows: "The long struggle we have had to obtain an efficient through line to Montreal and other points on the St. Lawrence River is over, and the thing is accomplished. We have now, through the means and great energy and perseverance of the Hon. Bradley Barlow, owner and manager of the Canadian line of roads with which we connect at Newport, a well-established line to Montreal, and embracing the line of roads on the north shore of the St. Lawrence River, which is developing a larger traffic than we had anticipated, and which we think is likely to increase and be permanent. Our relations with all connecting roads are of the most friendly nature, and the prospects for business the coming year are encouraging."

But one serious accident happened during the year, an

unexplained derailment, in which a passenger car was upset, one passenger killed and several hurt. The claims for damages from this accident have not all been settled.

St. Paul & Duluth.

This company owns a line from St. Paul, Minn., to Duluth, 156 miles, with a branch to Knife Falls, 6 miles, and it works under lease the Stillwater & St. Paul road, from White Bear to Stillwater, 13 miles, making 169 miles owned and 175 worked. Of the main line 24 miles, from Thomson Junction to Duluth, are owned and used in common with the Northern Pacific. The company has also lately acquired one-half interest in a branch from Wyoming to Taylor's Falls, 21 miles. The report is for the year 1880.

The equipment consists of 24 locomotives; 8 passenger, 2 sleeping, 6 combination and 2 baggage, mail and express cars; 388 box, 6 stock, 151 flat and 12 caboose cars; 1 pay and 8 service cars; 79 hand and push cars.

The general account is as follows:

Stock, common.....	\$4,055,407.51
preferred.....	4,705,006.91
Total.....	\$8,760,414.42
Bills and accounts payable.....	488,824.22
Northwestern equipment trust.....	157,500.00
Revenue account.....	670,433.03
Total.....	\$10,077,771.67
Road and property.....	\$9,824,300.52
Stillwater & St. Paul lands.....	12,881.37
Stocks and bonds.....	102,876.87
Materials.....	64,263.98
Cash and accounts receivable.....	73,448.93
Total.....	10,077,771.67

Since the close of the year an issue of \$1,000,000 new first-mortgage bonds has been authorized.

The Land Department sold 4,545.77 acres, leaving 1,271,920.24 acres still unsold. The department received from land sales \$8,555.76; timber sales, \$112,235.97; total, \$120,791.73. The expenses were \$19,739.61, leaving a net balance of \$101,052.12. Of the receipts, however, \$43,500 were in preferred stock, so that the net cash return from the Land Department was \$57,552.12 for the year.

The traffic statements are as follows:

	1880.	1879.	Increase.	P. c.
Passengers carried.....	104,247	76,433	27,814	36.4
Tons freight carried.....	355,004	314,787	40,217	12.8
Ton miles.....	32,207,846			
Receipt per ton per mile.....	1.34 cts.			

Of the tons carried last year 126,852 were moved north and 223,152 south. The Minneapolis & St. Louis trains carried about 50,000 tons to Duluth and 20,500 tons from Duluth in addition to that reported above.

The earnings of the year were as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Freight.....	\$432,303.61	\$452,113.50	D. \$19,809.89	4.2
Passenger.....	117,208.57	87,583.41	I. 29,625.16	33.7
Mail, etc.....	15,350.29	16,079.37	D. 729.08	4.6
Minn. & St. L. rents.....	103,915.43		I. 103,915.43	
Total.....	\$668,777.90	\$555,776.28	\$113,001.62	20.3
Expenses.....	575,595.45	394,872.32	I. 180,723.13	45.7
Net earnings.....	\$93,182.45	\$160,904.06	D. \$67,721.61	42.1
Gross earn. per mile.....	3,821.50	3,175.02	I. 646.57	20.3
Net earn. per mile.....	532.47	919.45	D. 386.98	42.1
Per cent. of exps.....	85.99	71.05	I. 14.94	

The expenses include payments for unusually large renewals of permanent way and renewals and repairs of equipment. Maintenance of way expenses alone were 63 per cent. greater than in the previous year.

The income account was as follows:

Net railroad receipts.....	\$93,182.45
Net cash receipts, Land Department.....	57,552.12
Total.....	\$150,734.57
Rent Stillwater & St. Paul R. R.....	\$20,000.00
Interest, insurance, etc.....	57,118.67
Total.....	\$77,118.67
Balance.....	\$73,625.90
St. Croix Branch, construction.....	\$129,731.06
Improvements of road.....	104,647.92
Equipment account.....	65,901.84
Total.....	300,280.82
Excess of expenditures.....	\$226,654.92

The chief items of improvement were \$40,698.30 for depot grounds, buildings, etc., \$22,755.25 for extension of Duluth docks, and \$15,000 for St. Paul Union depot.

Under a contract made during the year (May 1) the Minneapolis & St. Louis Company runs its trains over this road from White Bear Junction to Duluth. The two companies have also built jointly and work on joint account a branch from Wyoming to Taylor's Falls, 21 miles. The Minneapolis & St. Louis pays for the use of the road to Duluth \$50,000 a year and a part of the expenses of maintenance of way and renewals, determined by the proportion which the wheelage of its trains bears to the total wheelage passing over the road.

Renewals included 1,500 tons of steel rails. Two high trestles were rebuilt and several small bridges replaced by culverts and embankments. The tracks have been connected with the Union Depot in St. Paul, and the old passenger depot converted into a freight-house.

Natchez, Jackson & Columbus.

During the year 1880, which is covered by its report, this company worked a line (of 3 ft. 6 in. gauge) from Natchez, Miss., to Martin, 43 miles. The road is now being extended.

The general account is as follows:

Stock.....	\$370,509.50
Bonds.....	188,400.00
Bills and accounts payable.....	27,065.04
Total.....	\$585,974.54
Construction, including extensions.....	\$556,089.83
Old interest funded.....	9,095.13
Cash and receivables.....	14,649.12
Profit and loss.....	6,740.46
Total.....	\$585,974.54

The bonds were issued during the year, chiefly to fund floating debt. They bear 10 per cent. interest and can be retired at the option of the company. The authorized issue is \$200,000, and the company had on Dec. 31 \$11,600 unsold.

The earnings for the year were as follows:

	1880.	1879.	Increase.	P. c.
Passengers.....	\$10,862.50	\$9,226.43	\$1,636.07	17.7
Freight.....	28,625.78	27,825.57	800.21	2.9
Other.....	2,366.92	2,228.52	138.40	6.2
Total.....	\$41,855.20	\$39,280.52	\$2,574.68	6.6
Expenses.....	21,401.19	19,392.27	2,008.92	10.4
Net earnings.....	\$20,454.01	\$19,888.25	\$565.76	2.8
Gross earnings per mile.....	973.38	913.50	59.88	6.6
Net earnings per mile.....	475.67	462.52	13.15	2.8
Per cent. of exps.....	51.13	49.37		

The road carried 7,858 bales of cotton, against 10,010 in 1879 and 8,251 in 1878. Earnings were diminished by the loss in cotton, and expenses increased by damage to the road from floods. More equipment is much needed.

The income account was as follows:

Net earnings.....	\$20,454.01
Legal expenses, etc.....	\$1,356.20
Interest.....	19,049.52
Total.....	20,405.72
Surplus for the year.....	\$48.20
Debit balance, Jan. 1, 1880.....	\$6,025.25
Claim for damaged cotton settled.....	703.50
Total.....	6,788.75
Debit balance, Jan. 1, 1881.....	\$6,740.46

Since the close of the year an extension of 19 miles has been about completed and contracts have been let for grading the further extension to Jackson. The company has authorized an issue of \$600,000 bonds to finish the road to Jackson, and has secured \$225,000 aid from the city of Natchez.

Pullman's Palace Car Co.

The report of this company for the year ending July 31, 1881, gives the following statements of liabilities and assets:

Stock.....	\$8,020,000.00
Fractional scrip.....	2,500.00
Bonds.....	2,222,500.00
Ant. recd. from sale of old Central Trans. Co. cars.....	423,154.50
Balance of accounts payable and receivable.....	497,933.62
Surplus fund.....	5,140,706.68
Total.....	\$16,308,097.10
Cars (502), equipments and franchises.....	\$9,020,000.58
Invested in car associations controlled.....	2,491,904.05
Union Foundry and Pullman car-wheel works.....	22,500.00
Real estate and plant, Detroit shops.....	370,520.84
Real estate and plant, works at Pullman.....	2,545,904.96
St. Louis repair shops.....	43,042.09
Real estate, Chicago.....	22,001.06
Materials and supplies, including cars now building.....	1,434,350.01
Patents, U. S. and foreign.....	184,383.43
Furniture and fixtures in 52 offices.....	65,725.60
Cash.....	87,156.89
Total.....	16,308,097.10

The bonded debt consists of \$1,265,000 currency 8 per cent. debentures, of which \$445,000 are due Feb. 15, 1887, and \$820,000 due Aug. 15, 1892; \$908,000 currency 7 per cent. debentures and \$49,500 sterling convertible 7 per cent. debentures. During the year \$328,000 currency 8 per cent. debentures, which fell due May 15, were retired. The sterling debentures were decreased by \$66,500, and the currency 7 per cent. debentures were increased \$141,000, a net decrease of \$253,500 in the bonded debt.

The stock was increased \$2,030,700 during the year. At the annual meeting, held Sept. 8, the stockholders voted to further increase the stock by \$2,018,000 (25 per cent.), the proceeds to be used for the shops and other improvements at Pullman.

The surplus fund is included in the following statements:

Guarantee fund account.....	\$15,728.55
Depreciation account.....	900,000.00
Income account.....	4,294,978.13
Total surplus.....	\$5,140,706.68
The course of this surplus account during the year was as follows:	
Sum of surplus accounts, July 31, 1880.....	\$4,395,109.45
Written off for old cars sold or destroyed.....	\$31,801.68
Erie & Atlantic line and Erie R. R., adjustment of accounts, depreciation, etc.....	100,065.08
Estimated depreciation in share of B. & O. cars.....	82,500.00
Doubtful accounts.....	14,480.72
Total.....	235,456.48
Balance.....	\$4,159,652.97
Add balance of income for 1880-81.....	981,053.71
Surplus, July 31, 1881.....	\$5,140,706.68

During the year the Detroit shops account increased \$6,052.05; the amount expended on the Chicago shops during the year was \$2,315,779.10. A large amount is still needed to complete these shops and the other improvements in progress at the company's new town at Pullman, near Chicago. The money for these improvements will be furnished by the issue of new stock authorized.

The stock was \$15,983 and the bonds \$4,029 per car owned.

The surplus over all charges for the year was sufficient to pay over 10 per cent. additional on the stock.

The income account is as follows:

Earnings (leased lines included).....	\$2,
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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

TOLLS ON THE ERIE CANAL.

We copy elsewhere, from the New York *Tribune*, an article on "Free Canals," partly to show that there is considerable public interest in the question and partly to show on what gross errors of fact regarding traffic an argument may be based in one of the foremost journals of the country, and one which is really, on many subjects, exceptionally well informed.

The *Tribune* first notes the present greatness and the future growth of the traffic to [which the canal gives an outlet. It says:

"Wonderful progress has been made during the past decade in the development of agriculture in the Northwest. Few persons realize it. Look upon any map of Dakota, Minnesota and Wisconsin. Here is a region, long undervalued and neglected, but now blossoming in immense wheat farms."

In 1869 and 1880 the crops of wheat of Dakota (and all the other territories), Minnesota and Wisconsin, and of the whole United States were:

	1869.	1880.	Inc. or Dec.
Wisconsin	25,606,000	16,464,000	D. 9,142,000
Minnesota	18,866,000	40,752,000	I. 21,886,000
Territories*	1,812,000	18,005,000	I. 16,193,000
Total	46,284,000	75,221,000	I. 28,937,000
United States	287,740,000	480,850,000	I. 193,110,000

* Including Nevada and Colorado, which were states in 1880. A large amount was produced in Washington in 1880 and a considerable amount in Utah and Colorado, nearly all the rest in Dakota.

Thus while there was a total increase of 193,000,000 bushels in the wheat production of the United States from 1869 to 1880, only 29,000,000 of that grain were in the states and territory where the *Tribune* sees such "wonderful progress," and one of these produced 55 per cent. more wheat in 1869 than in 1880. The increase in the whole country having been 67 per cent., this section selected for its wonderful progress has gained less than 63 per cent.—that is, its rate of progress has not been as fast as that of the rest of the country. Yet this selected district grows little other grain than wheat, while the rest of the country this side of the Rocky Mountains grows several times as much other grain.

Since 1873, we may add, the increase in wheat pro-

duction in the Wisconsin-Minnesota-Dakota group has been but 18,503,000 bushels, or less than 33 per cent., while in the rest of the United States it was 181,000,000, or more than 80 per cent.

For 1881 we have not yet final reports as to the production in different states, but the reports of the Department of Agriculture show the following changes in acreage from 1880 to 1881:

	1880.	1881.	Decrease.
Wisconsin	1,680,000	1,455,000	225,000
Minnesota	2,830,000	2,815,000	15,000
Territories	1,385,000	825,000	560,000
Total	5,895,000	5,095,000	800,000
United States	36,037,950	36,003,000	34,950

Thus from 1880 to 1881 the progress was backward in all the territory which the *Tribune* selects as going ahead wonderfully. With a decrease of but 35,000 acres (less than one-tenth of 1 per cent.) in the aggregate wheat acreage of the United States, these states have a decrease of 800,000 acres, which is nearly 16 per cent. We believe there must be a mistake in the great decrease of 560,000 acres (40 per cent.) reported for the territories by the Agricultural Department, but these are the only data that we have.

Again, the *Tribune* argues the need of promoting the export trade in order to keep up the great import trade of New York, as follows:

"The ships which carry abroad the products of this country come back laden with European manufactures and products. They naturally return to the port whence they sailed, for they are needed there, to be again filled for another outward voyage. If the policy of New York is such that the shipments of grain are deflected to Philadelphia, Boston and Portland, the immediate consequence will be that our imports from Europe will in about the same proportion enter the country through Portland, Boston and Philadelphia."

This is another case of inferring facts, instead of looking at them. One of the commonest assumptions is that an export business will create an import business, because, etc. The reasons given often seem very good, but there is no need of reasoning on the matter. The country has had abundance of experience, and the fact is, an export business does not create an import business. Several American cities that make heavy exports have but trifling imports. Some of those places have had a heavy export business more than fifty years and have not yet succeeded in building up the important business which we are told is a consequence of an export business.

Some have enormously increased their proportion of the grain exports within ten or fifteen years, but have no larger a proportion of the imports of the country than they had before. Taking the results of a single month, the figures of which are before us, we find that the value of the exports of New Orleans was 18½ per cent. of the total value of the United States exports, but its imports were but 1.3 per cent. of the whole. Yet New Orleans has been a great exporting city for fifty years. The same month Savannah's exports were 6.23 per cent. of the whole, its imports but 0.02 per cent. Baltimore's exports were 5.76, its imports 2.17 per cent. of the total. On the other hand, New York, with 37.8 per cent. of the exports, had 74.34 per cent. of the imports. Within 15 years nearly the whole great export grain business of Baltimore and Philadelphia has been built up, but this has not affected New York imports in the least, so far as can be seen. In the five years, from 1864 to 1868, New York's exports were 54½ per cent. of the total of the country, and its imports 66½ per cent. In 1880 its exports had fallen to 34 per cent., but its imports had risen to 71½ per cent.

The argument that vessels which take out cargoes will bring back cargoes seems very plausible to those who know nothing about the nature and relative amounts of the imports and exports; we have seen, however, that vessels which take out the large exports of New Orleans, Charleston and Savannah do not bring back cargoes. And the truth is that comparatively few vessels returning to this country from Europe bring cargoes, because there is nothing for them to bring. It is generally understood that three or four tons of freight are shipped by rail from the West to the East to one from the East to the West. The disproportion is in the same direction, but greater in extent, with the trans-Atlantic business. We sell bulky raw materials, and we buy manufactured goods costly in proportion to their weight. Sailing vessels find it hard to get anything to carry, especially when we are not importing iron, and merchandise imports are only wanted at great marts, where all qualities of all kinds of goods are kept by competing traders, so that the merchants from other places can select anything they want in one city. Savannah exports many cargoes of cotton of immense aggregate value, but it buys its imported merchandise in New York, and so do many other places at which shipping from Europe arrives in ballast sufficient to bring twenty times their total consumption of imports. The steamer lines to New York and Boston bring to the United States nearly four-

fifths of its merchandise imports. Another considerable percentage arrives at San Francisco (chiefly tea). Philadelphia and Baltimore may get 6 or 7 per cent. of the whole; and the other places hardly count as importing cities.

But what would be the probable effect of the abolition of tolls on the Erie Canal? It seems somehow to be looked upon as a novel experiment, when in fact it is simply a repetition and the last possible repetition of an experiment that has been made several times already. For an abolition of the tolls, now amounting to just about one cent per bushel on wheat, or an equal weight of other grain, is simply a reduction of one cent in the tolls; its total effect on the expenses of the boatman and on the rate at which he can afford to carry is limited strictly to this sum. A few years ago a reduction of a cent a bushel was made, and it doubtless has enabled the boatmen to carry without loss at times when otherwise they would have been compelled to abandon the business, yet it did not prevent a great many of them from tying up their boats for a considerable period in two or three of the four years since the reduction. Yet to the boatman any reduction of tolls is doubtless an advantage. Boatmen, however, are a small class; and the people of the state certainly are not willing to assume the expense of maintaining the canal solely for their benefit.

The argument urged is that it will promote the business of the state and city of New York; that is, enable it to get a larger share of the traffic than it otherwise would. The people of New York do not care to build up a traffic which they do not get, and what they would aim at by lower tolls is a special growth in New York business. For there is growth, and enormous growth, as things are. In 1880 New York received about 143,000,000 bushels of grain (beside flour), against 72,000,000 in 1876, when Baltimore and Philadelphia became prominent as exporters of grain; and out of an aggregate increase of 137,000,000 bushels at all the Atlantic ports in these four years, New York gained 71,000,000, in spite of an improved Mississippi, as well as the competition of Philadelphia and Baltimore. If the canal tolls are abolished, it will be with the expectation that out of the next gain of 137,000,000, New York will get more than 71,000,000 bushels. That is, it will be expected that the reduction of the expense by canal one cent a bushel will give New York an advantage which other cities will not share. Let us consider this, for the whole ground of the proposed measure lies in it.

New York receives grain by the railroads and the Erie Canal; the other Eastern ports, with the exception of Montreal, by the railroads alone. The railroads in order to get any grain have to make rates, while navigation is open, not very much higher than the canal rates. This is true of the railroads to New York as well as of those to Baltimore, Philadelphia and Boston. That is, the canal rates govern. They limit the rate, though not so closely, in winter also. If the railroads charge too much, the grain will be held in elevators at the lake ports until spring, as was almost universally the practice until a quite recent time. If the canal rate is 10 cents a bushel, the rail rate cannot be more, we will say, than 12 cents. If the canal rate is reduced to 7 cents, whether by competition, reduced expenses, or reduced tolls, the rail rate then must be reduced to the same extent, or to 9 cents; and at that reduction the railroads carry just as large a proportion of the business as before. A further reduction of a cent in the canal rate causes a reduction of a cent also in the rail rate, but diverts no grain to the canal and to New York, unless the canal rate is made so low that the railroads cease to compete. Why should it? As in every other business, the railroads have to sell their goods at the market price. When the former reduction in tolls was made, they carried not less but more than before. In 1876 the railroads brought to the five Eastern ports 119,000,000 bushels of grain, an amount large without precedent, owing chiefly to a railroad war. The tolls were reduced in the course of the next year, but in 1878 the rail deliveries were 170,000,000, in 1879 215,000,000, and in 1880 203,000,000 bushels. In 1876 the proportion of the total delivered to these ports (which receive only by the Erie Canal and by rail) by rail was 79 per cent., in 1878 73 per cent., in 1879 79 per cent., and in 1880 74 per cent. The proportions and quantities are much affected by the length of the season of canal navigation (it was exceptionally long in 1878 and 1880), and by railroad wars. In fact in several recent years the railroads have made the canal rates on grain, and not the canal boats the rail rates, which latter is the natural course of things. This was true in 1876, part of 1878, until near September in 1879, and again this year. Indeed, the only full season since tolls were reduced in which canal rates were left to the competition.

of the boats has been 1880. Now, what was the effect on canal rates that year? The rates averaged just about the same as in 1876, when the railroads forced them down. The canal boats of course will not reduce their prices if tolls are abolished, if they can help it; and unless there is a railroad war experience indicates that they can help it. At all times when the railroads have maintained their rates the canal boats have received for carrying grain at least as much as their average last year, and usually considerably more. If the tolls should be abolished next season and the railroads should maintain a grain rate as high even as 20 cents per 100 lbs. from Chicago to New York, the canal boats would ask and receive considerably more than they have obtained this season while paying a cent a bushel for toll.

It remains to inquire whether the removal of this toll would cause the railroads to withdraw from the grain trade. It seems almost ludicrous to make this inquiry at a time when a reduction of more than 10 cents a bushel in the rail rate has not driven one of them from the field, but has led them to carry more grain than ever before in the summer season. The competition of a canal boat by a reduction of a cent a bushel in its rate is just as formidable as the competition of a rival railroad by an equal reduction, and no more so. But railroads begin their competition by reductions usually of several times this amount. A cent, however, is all that remains to be taken from canal tolls; if this cent should be taken from the rates charged by the boats, we may be sure the reduction would be from the 5½ and 6 cents which they obtained in midsummer in 1880, when the railroads did not force their rates down; and not from the 3½ and 4 cents which the quarrels of the railroads have forced them to accept this year. That is, the simple abolition of tolls will not make canal rates lower than they have been this year and in 1879 and 1878; but it will enable the boats to run when railroad wars force the rates down to that level. But in no case do we see that it would enable New York to get any larger proportion of the Western grain. In the extreme case of a bitter railroad war it might make all rates lower by a cent a bushel; but as the decrease would apply to Philadelphia, Baltimore and Boston as well as to New York, it is hard to see why the first-named cities should lose by it or New York gain.

Growth of New Orleans Grain Traffic.

The receipts of grain and flour at New Orleans for the 12 months ending with August for eleven successive years have been:

Year.	Wheat.	Corn.	All grains.	Flour and meal.	Grain and flour.
1870-71.	13,765	4,886,860	6,895,617	1,541,281	14,001,922
1871-72.	461	6,800,908	6,801,369	1,087,488	15,256,805
1872-73.	896	6,097,522	6,098,418	1,046,024	13,214,226
1873-74.	325,287	5,080,402	5,405,689	1,001,504	12,235,333
1874-75.	145,485	3,465,900	3,611,385	846,242	9,980,296
1875-76.	82,812	4,202,022	4,284,834	791,701	9,544,194
1876-77.	110,561	5,580,150	5,690,711	631,602	10,025,381
1877-78.	1,048,857	7,966,112	9,014,969	742,497	14,154,631
1878-79.	2,282,054	6,076,830	8,358,884	783,364	13,247,673
1879-80.	5,169,497	11,777,745	16,947,242	789,032	21,196,575
1880-81.	6,707,982	11,508,685	18,216,667	768,293	23,407,559

If we look at the last column, showing the total of grain and of flour reduced to bushels, we will see that in the first four years chronicled New Orleans had a heavy grain trade. It had more than 8 per cent. of the total receipts at Atlantic ports in the first two years and 6 per cent. as late as 1874; and it has never had 8 per cent. since, and last year only about 6 per cent. But after 1874 until 1879-80 the grain business of New Orleans did not keep pace with that of the other Atlantic ports. In a period of four years, during which the aggregate receipts of the Atlantic ports increased from 194,000,000 to 350,000,000 bushels, or 80 per cent., the New Orleans receipts increased only from 9,700,000 to 13,300,000, or 40 per cent. The great gain in 1879-80 at New Orleans only made up for lost time, and the increase of New Orleans in the last ten years, after these two last years of great gain, is, after all, but 53 per cent., while for the seven Atlantic ports the gain is more than 300 per cent. That is, out of a total gain in Atlantic receipts of 280,000,000 bushels made since 1871, New Orleans has gained 8,000,000. What has made it striking and really significant is the fact that its gain was preceded by a considerable decline and was made almost wholly within the past two years.

It will be noted that in the first seven of the eleven years for which the receipts of New Orleans are given in the table, it received practically no wheat, while last year wheat formed 6,700,000 bushels of the total. But in the early years it received a good deal more flour than now, and, indeed, its flour receipts have not increased much in the past two years of heavy grain business.

The gain in 1880-81 over the previous year is but 10½ per cent., and might be taken to signify that the great growth at New Orleans has been arrested but for the fact that in this last year while New Orleans gained

2,200,000 bushels in receipts there was a decrease of about 18,000,000 in the aggregate receipts of the seven Atlantic ports.

The competition of New Orleans is only for the grain which it exports, and we shall understand the growth of that competition best by examining its exports for successive years, which have been:

Year.	Wheat.	Corn.	All grain.	Flour.	Grain and flour.
1875.....	206,399	197,433	403,832	74,219	774,927
1876.....	37,102	1,639,756	1,676,858	93,792	2,145,818
1877.....	105,271	2,824,921	2,930,192	34,208	3,101,232
1878-79.....	1,808,084	6,034,654	6,037,454	38,042	6,208,643
1879-80.....	5,344,510	9,205,984	14,615,143	106,029	15,090,340
1880-81.....	6,536,089	9,137,373	15,720,423	82,518	16,091,682

We cannot go so far back with the exports as with the receipts, for want of records; but it appears that no longer ago than 1875 New Orleans practically had no grain exports. Its considerable receipts were substantially all for domestic consumption; and this, we presume, was true of the four or five previous years when the receipts were larger. Substantially its export business is the growth of the past six years. It increased 180 per cent. from 1875 to 1876, 44½ from 1876 to 1877, 100 per cent. from 1877 to 1878-79, 155 from 1878-79 to 1879-80, and 6½ per cent. last year.

However, its exports last year were less than 6 per cent. of the aggregate exports of the seven Atlantic ports, and but about one-eighth of the New York exports.

These are, however, large exports for the infancy of a business, and it is of course the probability of an increase in the future comparable to that of the past few years that makes carriers observe so closely the movement by way of New Orleans. The very low rail rates of the present summer have been unfavorable to it, but New Orleans has never yet received much grain in the summer. The country which alone has hitherto marketed any considerable amount of grain by the Mississippi has much lighter crops, especially wheat, this year than for several seasons previous, but this may not have had a great effect yet. If the barges are unable to obtain cargoes where they usually have found them, they will go somewhere else for them, as far as navigable waters extend, and this may result in their competing for grain in places where they never yet have been.

Growth of the Ocean and Lake Marine.

The ocean marine is increasing like other facilities for transportation at this time, though for some years, and until recently, the complaint was general that there was insufficient employment for the existing tonnage, and even now, except for certain traffic, like the wheat shipments from San Francisco to Europe, for which long voyage only sailing vessels are employed, ocean rates are not high; though probably an increased traffic in the direction in which lately vessels had little business has considerably increased the earnings per round trip, as in the case of the lines between this country and Europe, which in the year ending with June last must have received as much as \$18,000,000 for carrying emigrants, when a few years ago the emigrant business brought them not more than \$4,500,000. Ship-building on the Clyde has been more active this year than ever before, and the tonnage launched for the eight months ending with August is nearly one-half greater than last year, though the number of vessels is less. The number of vessels, their aggregate tonnage and the average tonnage of each launched on the Clyde in the first eight months of each of six years has been:

Year.	Number vessels.	Total tonnage.	Average tonnage.
1874.....	122	169,500	1,389
1875.....	159	107,500	676
1876.....	181	155,700	860
1877.....	137	114,200	833
1878.....	169	147,000	871
1881.....	153	214,990	1,405

The vessels for long voyages were almost uniformly made of large capacity in 1874, as well as now, though they are made larger now than then. The fluctuations in the average capacity of the vessels launched is largely due to the proportion of vessels built for long voyages. About 1874 the sea seems to have been overstocked with such vessels, and for several years comparatively few new ones were built. Now a great many are constructed. It should be said that up to this year 1874 was the year of the greatest amount of shipbuilding. According to appearances—notice of activity in yards, vessels in stocks and vessels launched already this season—there is also greater activity in shipbuilding this year than ever before on our great lakes, which will be encouraged rather than discouraged, we should say, by the railroad war this season; because the lake vessels, in a year when the railroads have done their utmost against them, have yet made satisfactory profits, especially the large vessels, which form by far the larger part of those now constructed. This is a matter of no little importance

to the railroads, for it will be comparatively an easy matter to overstock the lakes with vessels, and if done it will reduce the rate between the upper lakes and Buffalo to an amount little greater than the cost of running the vessels, which we may be sure will be less than the lowest amount the vessels have received this year, which at one time fell a little below 1¼ cents a bushel from Chicago to Buffalo. But the prospect of very low lake rates, though not favorable, at least at first, to many of the roads east of Chicago, is altogether welcome to those further west, and to the country at large, and not so unfavorable even to the lines between Buffalo and Chicago as most people suppose. If these vessels carried all kinds of freight, the railroads would have much more to fear from them. But practically they carry nothing but grain and flour eastward, and but a small proportion of the flour (18½ per cent. of the total Chicago shipments in 1880), while the railroads carry all the livestock, nearly all the provisions (more than 90 per cent. of the shipments from Chicago even), and by far the larger part of the flour; for we must remember that only Chicago and Milwaukee ship appreciable quantities of flour or provisions by rail, and nearly the total shipments of interior points are by rail; and of the total shipments of flour by the Northwest last year, not more than 6 per cent. went by lake.

Now the more the carriage of grain from the Northwest is cheapened, the faster that country will grow and the more it will have to ship, not only of grain, but of flour, provisions and live stock, and the more it will buy in the East. Now nearly all purchases in the East (except coal, and much of that), is brought to it by rail, and at rates which average probably twice what the railroads can get for carrying grain, even when circumstances are in their favor; and any addition to this traffic can be carried with next to no increase in expenses, because most of the cars now have to be hauled west empty. Of course the growth of production in the Northwest consequent on lower rates for transportation would not occur all at once, nor at all until it was shown that the low rates were likely to be permanent; and some of the railroads would doubtless suffer meanwhile; but eventually we believe that even the railroads between the West and the seaboard would profit by such a cheapening of water transportation as would deprive them of nearly all their grain shipped to the seaboard for export, whether that cheapening be caused by a more effective lake marine, an improved St. Lawrence route, or an improved Mississippi River route, or by all of them together; while the Northwestern railroads would gain greatly by it, if the cheapening were large in amount. It must be remembered, however, that there can be no great saving from the rates charged this season, because the rates themselves amount to very little. Wheat is now taken from Chicago to New York by water for about 8 cents a bushel, and at one time corn was taken for 6 cents. No reduction that it is possible to make in these rates will have much effect on production. If they could be assured for the future, grain production would be stimulated about as much as it ever can be by cheap transportation east of Chicago and St. Louis. And the increase of the lake marine gives reason to believe that they will be continued as far east as Buffalo, at least. The canal rate this year, however, was made low by the unprofitably low rates of the railroads, and will not continue low under ordinary circumstances. But the Welland Canal may be the extraordinary circumstance which will hereafter keep down canal rates to the level of the present unprofitable season, or, as an alternative, divert the traffic. Even it, however, cannot cheapen transportation much compared with this season; for most of it the canal boats have received but 3½ to 4 cents a bushel for carrying corn from Buffalo to New York. Even should the vessels down the St. Lawrence carry to Montreal for half that rate (from Lake Erie) the reduction would have little effect on future production; it would not be one-fourth as much as the reduction of rail rates this summer below those of last year. But this year has been an exceptional one; if least there have not been many like it heretofore. At its cheap rates become the standard rates hereafter, the Northwest will have all the encouragement it needs, if it needs any, to extend the area cultivated and increase production.

The Passenger War.

On the morning of Tuesday of last week the two Vanderbilt roads announced in Chicago that rebate tickets to New York would be sold for \$10.25 (the rate had been about \$15 for a long time), to Boston by way of Albany for \$11.25, and to Boston by way of New York for \$16. This was followed by the Pennsylvania making the same rates, but its \$11.25 tickets to Boston read by way of New York, of

course. The Baltimore & Ohio sold tickets at the same rates, but did not make rebates, and passengers buying its tickets could get off at Washington, Baltimore or Philadelphia, though it checked baggage to destination only on these tickets.

On the evening of the same day the Vanderbilt roads reduced their rates to \$5 to New York, \$6 to Boston, by way of Albany, and \$10.75 to Boston, by way of New York. The next day the Pennsylvania made its rates also \$5 to New York, and \$6 to Boston, the latter being limited to tickets by the fast train leaving Chicago at 3:30 p. m., whose Boston passengers are taken by ferry in a through car around New York city to the New York & New Haven road. By other trains, in which the passenger might stop at New York, its rate was made \$10.75 to Boston, or the same as by the Vanderbilt roads via New York, the difference being the local rate from New York to Boston. These rates have been maintained constantly since, we understand. The regular rate for limited tickets as given on the rate sheets is \$20 from Chicago to New York, \$21 to Boston, via Albany, and \$25.75 to Boston, via New York. The Pennsylvania \$6 passengers go over the New York & New England, and this road will also very soon have a connection with the Erie at Newburgh, for both passengers and freight. The reduction to Boston, coming after the Grand Trunk had been selling \$5 tickets for several weeks, is not likely to greatly increase the sale of Boston tickets, but as the rate to New York has been pretty steady at \$15, a considerable addition to New York business may be expected, and that at a season when it is usually heaviest. With a fare of \$5 from Chicago to New York and of \$7 from New York to Chicago, people can afford to travel who never traveled before. The former rate is a trifle more than half a cent a mile. The Baltimore & Ohio, which owns its own sleeping-cars, is reported to sell tickets at the reduced rates only to those who buy a berth in a through sleeping-car, which costs \$5 more, and this gives it an advantage over companies not owing their sleeping-cars.

On the same Wednesday when the reduction was made in New York tickets, the Grand Trunk began selling round-trip tickets, Chicago to Boston and return (about 2,500 miles) for \$10, good for 30 days. It had for weeks sold tickets in either direction for \$5, but of course no one could be sure that, having got 1,200 miles away from home for \$5, he would not have to pay the regular rate of \$21 to get back again, and there are doubtless many who can afford to spend \$10 for a journey, but could not afford to take the risk even of spending \$25. But having for about six weeks carried at the \$5-rate, probably most of those who travel, because it is very cheap have already taken advantage of the opportunity, if they wanted to go to Boston, or from Boston to Chicago. It is reported that the Grand Trunk down to this week had sold about 7,500 tickets to Boston. It has also made a \$5-rate from Chicago to Buffalo, which spoils some local business.

The Baltimore & Ohio finally followed the policy of the other roads and sold only rebate tickets. All the roads do this now, we believe. You can have a ticket from Chicago to New York for a quarter of the regular rate, but you cannot leave the train at Cleveland, Pittsburgh or Buffalo, or rather, if you do, you lose the rebate of \$10 or \$15 which you pay in addition to the \$5-rate at Chicago, and which will be refunded to you only at New York on your writing a signature which answers to that which you wrote on the rebate ticket when you bought it. In this way rates to intermediate places are pretty well maintained.

How great the losses are by these ridiculously low passenger rates we cannot even guess, for lack of information of the ordinary amount of travel between New York and Chicago and Boston and Chicago. It must, however, amount in the aggregate to a very large sum. The amount of travel would probably have been larger, even at full rates, this fall than at any other time in the history of our railroads, except during the Centennial Exhibition. Through passenger travel, however, affords but a moderate proportion of the gross earnings of most roads, and the passenger war cannot be nearly so serious a matter to any of the trunk lines as the reduction either in the east-bound or west-bound through freight rates. The reduction in freight rates applies to substantially all the through freight, and the through freight is a much larger proportion of the total business of the trunk lines than the through passenger business.

Since the last reductions by the Grand Trunk the Michigan Central has ceased to sell tickets reading over the Grand Trunk. Until very recently all the through passenger business of the Grand Trunk to Chicago was done over the Michigan Central.

Rates from St. Louis have not been reduced in proportion to the Chicago rate. A \$12-rate is made to New York, which is more than the local rate from St. Louis to Chicago, plus the cost of the rebate ticket from Chicago to New York; but as the passenger has to stop in Chicago to buy a rebate ticket, no considerable diversion of traffic that way is expected.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Sioux City & Pacific.—The *Nebraska Division* is extended from O'Neill, Neb., westward 12 miles.

Natchez, Jackson & Columbus.—Extended from Martin, Miss., northeast 9 miles. Gauge, 3 ft. 6 in.

Cincinnati & Eastern.—Extended from Winchester, O., eastward 5½ miles. Gauge, 3 ft.

Burlington & Missouri River in Nebraska.—The track of the *Republican Valley Division* is extended from Indianola, Neb., westward to Culbertson, 34 miles.

Des Moines Northwestern.—Extended north by west to Jefferson, Ia., 17 miles. Gauge, 3 ft.

Chicago, Rock Island & Pacific.—Track is laid on the loop line from Davenport, Ia., to Wilton, 26½ miles.

Texas & Pacific.—Extended from Pecos Crossing, Tex., westward 13 miles.

Southern Pacific.—Extended from Yuleta, Tex., southeast 75 miles.

Union Pacific.—Track is laid on the *Oregon Short Line* from Granger, Wy., northwest 25 miles.

This is a total of 217 miles of new railroad, making 4,235 miles this year against 3,288 miles reported at the corresponding time in 1880, 1,863 miles in 1879, 1,273 miles in 1878, 1,228 miles in 1877, 1,556 miles in 1876, 746 miles in 1875, 1,022 miles in 1874, 2,507 miles in 1873 and 4,623 miles in 1872.

THE ACCUMULATION OF GRAIN AT THE NORTHWESTERN MARKETS goes on at a remarkable rate. We called attention last week to the fact that while receipts at these markets have been larger than last year, for some time past, the receipts at Atlantic ports have been much smaller. Below we give the receipts and shipments of the seven Northwestern markets, the receipts and the exports at Atlantic ports for five successive weeks, the week for the exports being four days later than the date given for the other movements:

Week ending	Northwestern.		Atlantic.	
	Receipts.	Shipments.	Receipts.	Exports.
Aug. 6.....	6,032,700	4,832,203	5,349,732	4,507,908
" 13.....	6,995,745	5,848,709	5,797,821	4,019,291
" 20.....	7,502,463	5,400,136	5,324,453	4,138,884
" 27.....	8,110,023	6,294,012	5,590,946	3,845,590
Sept. 3.....	8,520,758	5,104,559	5,431,682	2,843,132

5 weeks.....36,881,689 27,608,619 27,694,634 19,444,805

Now contrast this with the movement in the corresponding five weeks of last year:

Week ending	Northwestern.		Atlantic.	
	Receipts.	Shipments.	Receipts.	Exports.
Aug. 6.....	7,202,397	6,528,553	8,236,866	6,495,935
" 13.....	7,643,310	6,635,331	8,193,567	6,161,202
" 20.....	7,747,247	6,789,435	7,696,271	6,444,497
" 27.....	8,555,570	6,556,832	7,328,674	6,743,355
Sept. 3.....	6,677,269	6,323,361	6,337,127	6,234,512

5 weeks.....37,885,793 32,834,112 37,762,505 34,679,585

The receipts of the Northwestern markets have been on the average about as large this year as last, but last year the shipments of these markets approximated their receipts much more closely than this year, and last year the Atlantic receipts were much larger than the shipments of the seven Northwestern markets. This year they are about the same.

Let us put the movement of this year for the five weeks by the side of that of last year:

	Northwestern.		Atlantic.	
	Receipts.	Shipments.	Receipts.	Shipments.
1881.....	36,881,689	27,608,619	27,694,634	19,444,805
1880.....	37,885,793	32,834,112	37,762,505	34,679,585
Decrease..	1,004,104	5,225,493	10,067,871	14,634,780

Thus, while the eight Northwestern markets received this year but a million bushels less than last, they shipped 5,200,000 less; and the Atlantic ports received 10,000,000 and exported 14,600,000 bushels less than last year in the corresponding five weeks. Further, this year the Northwestern markets shipped 9,000,000 bushels less than they received; last year, only 5,000,000 less. This year the Atlantic ports received only 86,000 bushels more than the Northwestern markets shipped; last year they received 5,000,000 bushels more; and finally this year the Atlantic ports have exported 8,250,000 bushels less than they received; last year only 3,700,000 bushels less.

These facts indicate, first, that the country which does not ship by way of the Northwestern markets, which is largely or mostly that east of St. Louis and Peoria and south of the lakes, has marketed much less grain than last year, while the rest of the Northwest has marketed as much; second, that the buyers in the Northwestern have more faith than Eastern buyers in future high prices, else they would have sold and forwarded the grain that they have been buying so freely, instead of accumulating 9,000,000 bushels in August, especially as transportation rates were extremely low; third, that buyers at the Atlantic ports have more faith in future high prices than European buyers, else they would have exported more grain, for which the ocean rates have been more favorable than last year.

Again, either the Northwest is being drained of its surplus grain, and shipments later must be comparatively very light, or the estimates of light crops on which the current high prices are based must be egregiously wrong. It is true that the chief movement so far is of last year's crop, being chiefly corn. But with the prospect of a very light crop farmers will spare less of their old corn than they otherwise would, and the movement late in the fall of the old crop and after December of the new crop must be very light.

THE ILLINOIS CORN CROP is the subject of a report by the State Department of Agriculture, giving the condition of the crop this year in percentages of an average yield in each county and in each of three divisions of the State, on the first day of June, July, August and September, and the reported actual yield last year. This latter it reports to have been 250,696,000 bushels, which is 11,500,000 bushels less than the estimate of the United States Department of Agriculture. It was something less than an average crop, and 50,000,000 bushels less than the crop of 1879, which, however, was above the average. The State Department reports a great falling off in the average condition during August, from 80 to 68.2 in the 33 northern counties, which produced 131,318,000 bushels last year; from 93 to 61 in the 35 central counties, whose production was 107,349,000 bushels last year, and from 38 to 14½ in the 34 southern counties, which, however, produced but

22,030,000 bushels last year. Assuming that last year's production was 90 per cent. of an average crop, in each section, the condition Sept. 1 (which can be little changed later) would be only 162,000,000 bushels from the same acreage as last year—little more than half the crop of 1879. But the national Agricultural Department reports an increase of 632,000 acres, or 7¼ per cent., over last year; this was chiefly due to the plowing up of winter-killed wheat, and as winter wheat is grown only in Central and Southern Illinois, we may credit the whole increase of corn acreage to these sections, equal to 13¼ per cent. of their total. Applying these figures, we have the following as the production of the three districts this year and last, by the state authorities' estimate:

	1881.	1880.	Decrease.
Northern Illinois.....	86,000,000	121,000,000	35,000,000
Central Illinois.....	82,750,000	107,000,000	24,250,000
Southern Illinois.....	4,000,000	22,000,000	18,000,000
Total.....	172,750,000	250,000,000	77,250,000

We believe this to be an exaggerated statement of the decrease. While the crop has been very badly damaged in many parts of the state, trustworthy reports in the newspapers from some of the largest corn-growing districts indicate that a very large part of the corn there will be quite as good as last year, though some fields that were planted very late are almost ruined by drought. It is the great failures or great successes that are most talked of, and all but cool-headed and experienced persons are likely to give too much attention to reports of these, though they may be the exceptions. A loss of 77,000,000 bushels in Illinois will be a serious thing to Illinois, and especially to Central and Southern Illinois, where the wheat crop has failed. It is, moreover, about 5 per cent. of the total corn crop of the United States last year. If there were no failures elsewhere it would not have much effect, but Indiana and a large part of Iowa and almost the entire South have suffered greatly also. On the other hand, an acreage for the whole country one-fifth greater than last year is reported, which with last year's yield would have added 300,000,000 bushels to the crops. It is then not likely that there will be very much less corn in the country than there was last year.

NEW YORK TRUNK LINE SHIPMENTS WESTWARD during August last are reported to have been 116,151 tons, against 89,000 last year, an increase of 30¼ per cent. The shipments by the several lines and their percentage of the total this year are given as follows:

	Tons.	Per cent of total.
New York Central.....	41,032	35.3
Erie.....	36,830	31.7
Pennsylvania.....	31,437	27.1
Baltimore & Ohio.....	6,852	5.9
Total.....	116,151	100.0

These percentages are not far from those allotted to the several lines under the pool, except that the Baltimore & Ohio has 2 less and the Pennsylvania 2 more than its proportion. The division between the New York Central and the Erie is made by classes, however, and tonnage does not show absolutely how they stand, as a ton of first-class freight is equivalent to more than two of fifth-class. The shipments in August were, we understand, much larger than in any previous month. No published statement of these trunk-line shipments westward has been made before, we believe, since 1879, when the total shipments for the first two years of the pool were published, and we made a graphical illustration of the amount shipped to each Western competing point (Sept. 19, 1879, page 499). In those two years the aggregate shipments from New York were 1,446,610 tons, an average of 60,275 tons per month, which is little more than half as much as last August's shipments. The general prosperity of the country is seen in scarcely anything more plainly than in these trunk-line shipments westward. The first year of the pool, business but just began to revive; the second, progress was marked; the third, it became decidedly heavy, and the fourth, ending with June last, it made another considerable gain. July, however, showed somewhat lighter shipments than last year. The great gain of August, however, has scarcely been equalled except by the gain made last year in the same month over 1879. August is always a month of more than average shipments. Of course shipments were this year stimulated by the very low rail rates. These are nominally on the average about 45 per cent. lower than previously under the pool, but are actually more than 50 per cent. lower, as the regular reduced rates are not adhered to. The gross receipts from the August business this year must have been at least one-third less than those from the much smaller August business last year; and as to the net receipts, the less said the better.

THE IOWA COAL MINES have immense importance, not only to Iowa, but to Minnesota and Southeastern Dakota, as they furnish almost the only supply of fuel to an immense area of prairie country which has no fuel of its own. The traffic is of very great importance to the railroads, and the Iowa lines which had no mines, or small ones, on them, have generally secured connections with productive mines, and in some cases bought extensive mining properties for their own use and that of the country on their lines. Coal-mining is prosecuted in no less than 26 Iowa counties, in which there are more than 300 mines, and their aggregate production in the year ending with May, 1880, was 1,367,229 tons, which is about five-sixths of a ton per inhabitant. The most thickly peopled part of Iowa, the eastern part, including all the Mississippi River towns, is chiefly

supplied from the mines of Northern Illinois, which in the year above named produced more than 8,000,000 tons. Thus the product of the Iowa mines is largely available for the treeless and coal less region in the western half of the state, and further northwest; many of the most productive mines being about midway between the Mississippi and the Missouri, near Fort Dodge, on the Illinois Central, and about Des Moines. The northerly mines, however, are not very productive, and we see the Chicago & Northwestern, when it purchased coal mines, going far to the south of its own line, on which, however, are several mines, while it reaches Des Moines, which is the centre of a considerable mining district. The largest production of any one county (300,000 tons), is in Mahaska county, about 50 miles southeast of Des Moines, which is crossed by two lines of the Rock Island road, and by the Central Iowa. All the lines across the state from the Mississippi to the Missouri have coal mines on them, with the exception of the Iowa & Dakota Division of the Chicago, Milwaukee & St. Paul. The most westerly mines are near the southwest corner of the state, on lines of the Chicago, Burlington & Quincy and the Wabash. The total production of the state may seem trifling in comparison with that of the Pennsylvania, and Ohio and other coal fields; but it is of special importance as being the nearest supply for an immense district north and northwest, until the Dakota beds of lignite are reached, and also as being capable of great development. It is to be said, however, that most of the Iowa coal is poor, and it lies in beds so thin that it is not always cheaply worked. A large proportion of the mines have heretofore been worked in winter only, and when the winter came unusually early and unusually severe last year it caught western and northern Iowa almost bare of fuel, which there was then great difficulty in procuring, because of the railroad blockades and the unusually heavy demand. Hereafter the mining is likely to be prosecuted to a greater extent in the summer, which will give the carriers more constant employment for their coal cars.

THE MISSISSIPPI RIVER GRAIN MOVEMENT has been reduced to insignificant proportions since the railroad war began; it was largest before lake navigation opened, but even after the lake opening it continued considerable, and for the six weeks before the beginning of the railroad war averaged 475,408 bushels weekly. But for the eleven weeks from the breaking out of the railroad war to Sept. 3, the river shipments have averaged but 209,652 bushels weekly, and for the five weeks since July they have averaged but 138,657 bushels a week. The average weekly shipments from the Northwestern markets by rail, river and lake, from the opening of lake navigation to the time the 15-cent rail rate was made (six weeks), and since that time to Sept. 3, and the percentage of the total by each, have been:

Av. to.	By rail.		By river.		By lake.	Total.
	Bushels.	P. c.	Bushels.	P. c.		
June 18.....	1,613,377	29.8	475,408	8.8	3,325,609	5,414,394
Av. since						
June 18.....	2,408,863	42.3	209,652	3.7	3,081,933	5,700,448

Thus in the second period the rail shipments have averaged nearly one-half greater than in the first, while the weekly river shipments have been 56 per cent. less, and the lake shipments 7½ per cent. less. The lake shipments have not been affected so much as was expected. Except for two or three weeks all the lake vessels have had plenty to do, and generally at remunerative rates. As for the river shipments, they are usually light in midsummer, but the business being new, this has been looked upon as exceptional, and it was claimed by many that they would continue heavy throughout the year, in the face of lake and rail competition.

LAKE RATES have both fallen and risen since we reported them for Wednesday of last week, and at the end of the week are the same as at the beginning—3½ cents for corn and 4 for wheat from Chicago to Buffalo, having been at least half a cent lower.

Canal rates advanced Monday and are reported Wednesday at 4½ cents a bushel for corn and 5 for wheat from Buffalo to New York. A large part of the fleet is still laid up, but the advance will probably draw out many boats, if it is maintained. Unless rail rates are advanced, however, it is doubtful if the present canal rates can be maintained. While the lake and canal rate from Chicago to Buffalo is 7½ cents a bushel for corn and 8½ for wheat, the railroads charge no more than 7 and 7½. But the high prices have so filled the Western markets that there is a pressure to ship, and after giving the railroads all they can carry at their low rates, the shippers compete for the limited stock of vessels, so as to give them higher rates. The circumstances at present would probably enable the roads, for a time, to get as much as 30 cents per 100 lbs. (instead of 12½) on shipments nearly as large as those they are now getting.

Ocean rates have fallen from 4d. a bushel last week to 3d. this week on grain by steam from New York to Liverpool. The high prices on this side have greatly reduced exports, and the steamers compete for grain to fill up cargoes of other better-paying freight. The reduction by sailing vessels, carrying nothing but grain, and delivering wherever the grain may be wanted, is not nearly so great.

AN ADVANCE OF FARES ON THE ELEVATED RAILROADS is recommended by Mr. Hopkins, one of the receivers. These fares, it must be remembered, are in many cases far below the legal limit, which is 10 cents a passenger below Fifty-ninth street except for four hours daily, when it is 5 cents, and 16 and 8 cents for passengers above that street. The charges are 10 and 5 both above and below Fifty-ninth

street; and the 5-cent rate is given for six instead of four hours each day. The President of the Manhattan Company reports that since the lease the average fare per passenger has been 6.81 cents, the working expenses 4.14, the fixed charges (rental) under the lease 3.65 cents, and the taxes 0.33 cent—a total expense (including taxes) of 4.97 cents per passenger, and a total charge of 5.62 cents, leaving a net loss to the lessee of 1.81 cents per passenger.

It would be rational to charge more for the long trips, like the 8½ miles from the Battery to Harlem, than for the short ones below Fifty-ninth street, which are from half a mile to 4½ miles; but it is very difficult to provide for any difference; and moreover the Harlem traffic is of the kind which would probably be most affected by an advance of fares. A 16-cent rate would certainly drive a large part of it away. The original sin in the whole matter was the construction of a large amount of road that was not needed; but for that, the Manhattan Company could probably pay even the enormous rental which it promised.

BUFFALO GRAIN SHIPMENTS BY CANAL AND RAIL have varied as follows before and since the low rail rate was made June 17, the figures giving the average weekly shipments for the four weeks from the opening of the canal this year to June 17; then the average for the 12 weeks of the railroad war to Sept. 9, and finally the actual shipments for the week ending Sept. 9:

	—1881.		P. c. by		—1880.		P. c. by	
	By canal.	By rail.	By canal.	By rail.	By canal.	By rail.	By canal.	By rail.
Av. to June 17.....	1,673,685	1,159,400	41.0	2,671,639	1,280,280	32.4		
Av. since June 17.....	1,100,553	1,868,063	63.0	2,313,129	1,635,300	41.4		
Week ending Sept. 9.....	1,093,500	1,710,500	61.0	2,271,630	1,321,500	36.8		

The higher rates on the canal seem to have had little effect on canal shipments, except in the week ending Sept. 2, when they were 1,418,000 bushels, and nearly as much as the rail shipments that week. The canal shipments since June 17 have not been quite half as large as last year, while the rail shipments have been 14½ per cent. larger than last year. But rates have been so much lower this year that the average weekly receipts of the canal boats for carrying grain have been but about \$41,800 this year, against \$129,500 last, and their receipts above tolls have been but \$30,800 a week this year against \$106,400 last year.

NEW ISSUES OF STOCKS AND BONDS IN EUROPE are recorded half-yearly by the Belgian journal, *Moniteur des Interêts Matériels*. For the first half of this year it foots up a total of \$802,652,000, of which \$342,266,000 were for railroads and other industrial enterprises, \$278,000,000 for government and city loans, and the balance for banks, etc. Of this sum about \$66,000,000 is charged to America, and \$54,617,000 for American railroads. Three-eighths of the whole amount was on account of the French government and French railroads—virtually nearly all for French railroads, as the government has undertaken a vast system of local lines for which it borrows. The whole amount of issue, however, is not much greater than the \$671,000,000 which the *Commercial and Financial Chronicle* figured up as the face value of the new stocks and bonds issued on account of railroads in this country during the first eight months of this year, which, it estimates, call for \$390,000,000 in cash, \$234,700,000 of which is required for new lines. The loans issued by France for substantially the same purpose amounted to \$255,000,000 for six months, but France is not investing this money at anything like that rate. The issues are largely for work done previously and to be done hereafter, and that is also the case with our new railroad issues.

CHICAGO RAIL SHIPMENTS EASTWARD, which for the week ending Sept. 3 were reported by the Board of Trade to be 53,948 tons, are reported for the week ending Sept. 10 to have been 55,276 tons, of which 7,856 tons were flour, 37,771 grain, and the balance provisions. The percentages shipped by the several routes last week were: Chicago & Grand Trunk, 9.8; Michigan Central, 24.9; Lake Shore, 28.9; Fort Wayne, 16.4; Pan-handle, 12.3; Baltimore & Ohio, 7.7. These are not very different from the pool percentages, but the total shipments, including those arriving from the West, billed through Chicago, may make a great deal of difference in the percentages. These total shipments for the week ending Sept. 3 were 63,144 tons, instead of 53,948 as reported by the Chicago Board of Trade. There have been but one or two weeks this year when they have been any larger, and in the corresponding week of last year they were about 25,000 tons less.

The Chicago shipments, however, are large altogether out of proportion to those of other places, except Milwaukee. The country south of the lakes is shipping less rather than more than last year, and the total eastward shipments are not very different from those of last year.

THE SUPERINTENDENTS' ASSOCIATION, the organization of which was begun a few months ago, will hold a meeting at the Windsor Hotel in New York next Wednesday. There is so much work that such an association, if the railroads were generally represented in it, could do, that it is very much to be desired that it should have a full attendance. Even should no permanent association be formed, a few meetings ought to be held to decide upon certain matters in which uniform action is very much to be desired. Not the least important of these is the question of uniformity of signals, concerning which a contributor has something to say this week, and which we have called attention to repeatedly heretofore. This subject ought to be thoroughly discussed. The variety and contrariety now are frightful, and much greater than are shown by Mr. Hill. We hope soon to publish a table giving

the practice on all the railroads in the United States, which has recently been compiled from their time-tables. It is of itself an eloquent argument in favor of action which will reduce this chaos into something like order.

THE NEW YORK, PENNSYLVANIA & OHIO RAILROAD reports to the Ohio Railroad Commission its operations for the year ending June 30, which includes but a few days of the railroad war, and was on the whole, a year of better maintained through rates than the previous year, which included demoralized rates in the summer of 1879. The road worked 55 miles more road in the latter year and increased its gross earnings from \$4,920,946 to \$5,604,470, an increase of \$683,524, or 13½ per cent. There was at the same time an increase of 9 per cent in the working expenses, leaving an increase from \$1,300,951 to \$1,656,163 in net earnings, amounting to \$355,212, or 27½ per cent. The increase in gross earnings per mile, however, was less than 3 per cent., but in net earnings per mile from \$2,538 to \$2,920, or 15 per cent. The passenger traffic shows the large increase of 17.2 per cent.; the freight traffic an increase of 22 per cent.

COLOR-BLINDNESS has been detected in 116 out of 4,384 pilots who were examined under the direction of the Marine Hospital Service last year. This is 2.65 per cent. of the whole number, or one in 37½—an alarmingly large proportion, considering that the position and course of a vessel at night can be known only by the colors of its lights. The *New York Tribune*, commenting on the numbers reported, says it is about one-quarter of one per cent., "which cannot be considered great." But as the proportion is actually more than ten times ¼ per cent., it must be considered great.

THE NATIONAL ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS will supplement its meeting in St. Louis next week (beginning Tuesday) by a delightful excursion to Colorado over lines of the Denver & Rio Grande and other roads, among some of the sublimest scenery on the continent.

Observations on English Railroads—The Midland Railway Works at Derby.

The Midland Railway, as its name indicates, extends north-westward from London through the middle of England, with branches which reach nearly every important city on that region. The company owns 1,150 miles of road, and with other lines partly owned, leased, and foreign lines in which it has running privileges, its engines work 1,729½ miles of road. On July 1 of this year it owned 1,518 locomotives, 3,639 cars or "carriages" used in passenger traffic, 33,294 freight cars or "wagons" employed in "goods" traffic, 2,068 drays and carts, and 2,796 horses. The principal shops for the construction and repair of rolling stock are at Derby, which is about the centre of England. The locomotive and car shops are separate from each other, the former being under the management of Mr. S. W. Johnson, Locomotive Superintendent, and the latter under that of Mr. T. G. Clayton, Carriage and Wagon Superintendent. About 3,000 men are employed in the locomotive shops and 1,500 in the car shops. Both of these are so extensive that it would be impossible to give anything like a complete description in the time that it was possible to devote to them. All that will be attempted will be to note a few observations which were made in looking through them in a somewhat hurried way.

It may be remarked here that it is somewhat more difficult to get the needed information for writing a description of works of this kind in Europe than it is in America. While the writer has been received with the utmost hospitality and politeness wherever he has applied for an interview with railroad officials, or for admission to see their works, yet there is more of what might be called the reticence of publication here than at home. That is, railroad officials seem to be somewhat more cautious about having things get into the papers than the same class are in the United States. Of course much of the difficulty referred to is due to the greater size and extent of the shops here, compared with most of those in America, and some of the apparent reticence may be attributable, too, to the greater competition of the different companies and the rivalry of their officers.

In going through the shops and in traveling through the stations of English railroads an American sees at once that the English engineers make much greater use of skylights in their roofs than we do in America. At stations it will often be found that the whole platform is roofed over with glass so as to admit a flood of light into the whole building. This is often needed, because the waiting-rooms, offices, etc., are placed in long buildings, running parallel with the tracks and platforms, and on each side of the road. Side windows to the space occupied by the tracks and platforms and to the rooms in the buildings are impossible, excepting on the outside of the latter. The roofs over the platforms and tracks, when the latter are covered, are therefore glazed with thick, rough glass, in some cases without any opaque roof at all. It is true, of course, that the damp climate and cloudy weather of England and Scotland make it desirable to admit more light, or rather to devote more space for the admission of light, than is required in America, where there is more sunshine. It is also true that means must often be adopted for excluding the latter in America, on account of our summer heat, but, allowing for all this, in running into an English station, and in going through English workshops, one is struck with the difference in this respect between theirs and our own. In the former there is a flood of light in every part, whereas ours are often as dark and dismal as one of the old

cathedrals here. In the shops at Derby, especially the newer portions of them, at least one half, perhaps more, of the roof surface is skylight. In some shops, windows in the side walls are entirely omitted, all the light being admitted from the roof. This practice, doubtless, it would not be advisable to follow in our country, on account of our hot summer weather, when a free circulation of air adds so much to the comfort of the workmen; but in the construction and the use of skylights we have much to learn from English practice.

In another direction, too, it must be frankly admitted that English engineers are very far ahead of their American brothers. This is in the use of all kinds of cranes and derricks. Whenever a considerable number of heavy objects is to be moved or lifted, there it is quite certain that some kind of crane will be found to do the work. These cranes are operated either by hand, steam or hydraulic power. Of the application of the latter more will be said in future, but there are probably very few American railroad managers or engineers who have any idea of the extent to which such power is applied or the variety of work which is done by it.

In the shops in Derby there are many illustrations of the application of various kinds of cranes. In all, or nearly all, the erecting shops, there are traveling cranes overhead, supported by posts or abutments at the walls of the buildings. These are so powerful that any object used about a locomotive can be lifted vertically and then moved longitudinally the whole length, or transversely the whole width of their span. Two of them will lift a locomotive entire.

Besides those referred to there are, in the machine shops, where heavy work like that on wheels, axles, cylinders, etc., is done, jib cranes, which are carried on two wheels which run on a single rail, velocipede fashion. The rail extends lengthwise of the shop, usually on the sides, in such a position that the jib can swing over and command the lathes, planers or other machines on which the work is done. Any object, a crank-axle for example, is taken up from the floor, and can be carried lengthwise any distance and swung over upon or from any machine that may be used. The mechanism of these cranes is driven by a running cotton rope. In boiler-shops, tank-shops, foundries, and even over the scrap-heap, where old boilers are cut up, cranes will be found.

Besides cranes, capstans are much used whenever there is any pulling to be done with ropes. These capstans are worked by the same power that is used for the cranes, which is often hydraulic pressure produced by an engine and accumulator, located in some convenient position, from which the liquid under pressure is conducted by pipes to any part of the works where it is required. In a future letter fuller descriptions, with illustrations, perhaps, of such appliances will be given.

Before leaving the subject of cranes, a very efficient form of transfer-table, or rather of means working such a table, at the car works at Derby, may be noted. There is nothing about the construction of the table itself which is especially noteworthy, but the way in which it was moved was new to the writer. Some of the American master mechanics have had experience of the difficulties which must be encountered in working a transfer-table by steam power. If it is moved by running ropes or chains, there is trouble in getting the two ends of the table to move equal distances in the same times, and if an engine is placed on the table itself, it is expensive and requires a special man to run it, and to be of much use steam must be kept up in the boiler at all times. The plan in use at the Derby shops is to have a small separate locomotive engine which runs on a track of its own in the middle of the transfer-table pit. It is simply coupled to the table by a long coupling-bar, and it then pushes or pulls the table as it would an ordinary car. On the locomotive there is a winding drum, on which a wire rope runs over pulleys or "snatch-blocks," so that it can be carried out laterally and attached to a car or "wagon," and the latter pulled on or off the table as required. The work of shifting cars both in and out of the shops and moving the table is all performed by the locomotive, with the assistance of one boy or man, besides the one in charge of the engine. It would not be difficult to design a locomotive of this kind which could be used for the purpose for which the one described is used, and which could also be employed for moving and switching cars about the works. At the Crewe shops some very small engines for running on an 18-in. gauge track are used for hauling all kinds of objects about the works on tracks especially laid for the purpose. These latter can be placed in many localities where there would not be room for a 4 ft. 8½-in. gauge, and if put down between the rails of the branch lines which connect the shops with the main line, a narrow-gauge engine of this kind could be used for the three-fold purpose of working the transfer-table, switching cars and moving heavy weights on trucks about the works.

The relative merits of English and American locomotives, of course, open a wide field for discussion, which has been talked and written about a great deal, often, it is to be regretted, without much knowledge. It may be well, then, not to enter this field at present, but to confine what is said to the noting of testimony bearing on the subject.

Although it may sound almost Hibernian to say so, the first impression produced by a sight of English locomotives is that they look very much like their photographs. The outside finish is totally different from that in use in the United States. There is an almost entire absence of all moldings and decorative features. The effort of the English locomotive engineer is to make his machines look as plain and simple as possible, whereas his American brother has aimed—at any rate until within a few years he did so—to make his engines look as stylish as possible. Although the old-

fashioned decorative features have to a great extent been abandoned with us, yet none of our builders have yet ventured to discard the moldings about the domes, sand-boxes and cabs of their engines, and our master mechanics still adhere to the use of Russia iron for boiler covering. In England ordinary sheet iron is used for the purpose and painted. At Crewe steel 1-16 in. thick is used. Cabs here are made of iron, as plain as the bonnet of a member of the Society of Friends, and the painting of engines and tenders is in plain colors, green, brown and black, with some simple striping to relieve it. The great majority of locomotives have inside cylinders, so that these parts and their connections are entirely hidden from view. Generally, too, neither passenger nor freight engines have trucks, or "bogies," as they are called here. On the London & Northwestern road, the check valves, instead of being placed on the outside of the boiler, are located at the back end of the fire-box casing, with a pipe inside the boiler to convey the water to the front ends of the tubes. All these features give English locomotives, to American eyes, an extremely plain look. It is generally conceded that the old-fashioned decoration in vogue on American roads was childish and barbaric, and that its abandonment was a happy riddance. If we went a step further, and gave up all decorative moldings, it would be a step in the right direction, and one which must inevitably be taken.

There are, though, some differences in the practice of English and American locomotive engineers which are of much more importance and less easily disposed of or accounted for than the one just referred to. As stated before, the great majority of English engines have inside cylinders and crank-axes, and comparatively few have trucks or "bogies." It is safe to say that there has not been an inside cylinder engine built in the United States in ten years, and it is almost equally true to say that in the same time none have been built there, excepting for switching or "shunting" service, without trucks of some kind. In England fire-boxes are always made of copper; in America it is seldom or never used for that purpose now, steel having entirely taken its place. At Crewe every part of the boilers, including chimneys, ash-pans, etc., is made of steel, excepting the fire-box, which is copper. The general practice among American master-mechanics is to make all other parts of iron, and the fire-box alone of steel, although now steel is growing into favor for boiler shells. This is the more remarkable because much of our coal has more impurities in it, which affect steel injuriously, than English coal has, and engines are undoubtedly worked harder with us than they are here. It has therefore seemed worth while to take some pains to learn why English locomotive engineers adhere to their practice in these respects and to draw no conclusions until all the testimony was taken. For the present, therefore, no full discussion of these questions will be attempted.

It may be said, though, that there is no place in England where the relative merits of the truck and rigid wheel-base systems should be so fully understood as at Derby, because on the Midland line both systems are very extensively used. It has many "bogie carriages" running, some of them Pullman, and others English compartment cars, and is now having more of the latter made. The verdict in this line, therefore, seems to be in favor of the bogie system for cars, and some of the officers of the road so expressed themselves. There are, however, some difficulties in the way of adopting our method of car construction to English carriages, which will be referred to hereafter.

Many of the locomotives also on the Midland line have trucks. Some of the former are of the usual American type, with four coupled wheels and a four-wheeled truck; others are tank engines, with the truck behind the fire-box. What is quite singular is, that many locomotive runners or "drivers," as they are called here, object to running an engine with a truck in front, on the ground that it is liable to leave the track. The Locomotive Superintendent of the Great Southern & Western Railway of Ireland stated to the writer that at first he had great difficulty in inducing his men to run tank engines of the kind described above, which it was desirable not to turn around, with the truck in front. They considered them much safer when running with the driving wheels ahead. This prejudice must be met in adopting truck engines here, just as the reverse would be if the use of the truck was abandoned with us. The last passenger engines with tenders ordered for the Midland line are being made with single pairs of leading wheels, and rigid axles instead of trucks; inside cylinders with crank-axes are used in all engines that have recently been built for this road.

The subject of boiler construction has been so much discussed of late, and the advantages of butt-joints have been so frequently set forth here in the Board of Trade reports on boiler explosions, and by engineers in papers on the subject read before engineering societies, that it was expected there would be much for an American to learn about them from English practice. Under the circumstances, it must be admitted that it was a very great surprise to find, at the Derby shops, which were first visited, that butt-joint boilers had been tried and the practice abandoned for the old-fashioned lap-joint with single rows of rivets. In 1863 Mr. Kirtley, the former Locomotive Superintendent of the Midland line, became alarmed on account of the occurrence of several explosions in close succession, and he then designed and built some boilers in which the principle of butt-joints was carried out so as to give the greatest attainable strength. The plates were made ¾ in. thick, rolled with thickened edges ½ in. thick, and all the seams were made with butt-joints, with heavy covering plates both inside and outside. Besides this, heavy rings were shrunk around the middle of the plates, forming the

barrel of the boiler. All of the seams were quadruple-riveted. Some of the engines with these boilers were in the yard at Derby, with the lagging removed, so that their construction could be seen. It would be very interesting if their history could be more fully known, and the results of their working ascertained, as it only can be when they are cut to pieces. The fact, though, that they have been in use since 1863 indicates that their life has by no means been a short one. It may be added, that the practice in this country, so far as ascertained, of constructing locomotive boilers is almost universally to make the longitudinal seams butt-jointed, with double covering plates. In many cases both the longitudinal and circumferential seams are butt-jointed. Generally boiler plates are made heavier than is customary in the United States. They vary in thickness here from ⅝ to 1 in.

The same difficulties are also encountered in this country in supporting the crown-sheets of fire-boxes that we are accustomed to at home, and a variety of expedients has been resorted to to get over the difficulties. At Derby and Crewe crown-bars slung to the outside shell are used. In some other shops the top staying is done with stay-bolts.

The breaking of stay-bolts is also an evil here, for which no effective remedy has been found.

The practice of case-hardening the working parts is much more employed, not only at Derby, but at other shops, than it is by American master mechanics. Special furnaces are constructed for the purpose, and links, hangers, pins, slides, tender-axle journals, etc., are thoroughly hardened, and afterward trued up with an emery wheel.

The hardening material employed is charcoal and soda-ash. The trough in which the parts to be cooled are plunged has an arrangement by which they are exposed to a rapid current of water, so that the latter may not be unduly heated by contact with the hot iron. A kind of rotary pump or propeller is employed for the purpose of producing the current.

In so large an establishment as that at Derby there were, of course, many other interesting features to note; but this letter has reached, or rather exceeded, the limits within which it should be confined, so that it must be abruptly ended.

M. N. F.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:
Ohio Central, annual meeting, in Toledo, O., Oct. 6, at 2 p. m.
Lake Erie & Western, annual meeting, at the office in Lafayette, Ind., Oct. 12, at 2 p. m.
Ohio & Mississippi, annual meeting, at the office, No. 59 West Fourth street, Cincinnati, O., Oct. 13, at 10 a. m. Transfer books close Sept. 17.

Railroad Conventions.

The *National Association of General Passenger & Ticket Agents* will meet in St. Louis, Sept. 20.
The *Master Car-Painters' Association* will hold its annual convention in New York City Sept. 21, beginning at 10 a. m.
The *Association of American Railroad Superintendents* will meet at the Windsor Hotel, New York, Sept. 21, at 11 a. m.
The *Order of Railway Conductors* will hold its fourteenth annual convention in Buffalo, N. Y., Oct. 4.
The *Railroad Commissioners' Convention* has been called to hold the fourth annual meeting in Atlanta, Ga., Oct. 11.
The *General Time Convention* will meet in New York, Oct. 13.
The *Southern Railway Time Convention* will meet in New York, Oct. 14.

Dividends.

Dividends have been declared as follows:
Chicago, Milwaukee & St. Paul, 3½ per cent., semi annual, on both preferred and common stock, payable Oct. 15. Transfer books close Sept. 20.
Chicago & Northwestern, 1½ per cent., quarterly, on the preferred stock, payable Sept. 28. Transfer books close Sept. 15.
Pullman Palace Car Co., 1½ per cent., special dividend out of the manufacturing profits of the Detroit shops, payable Sept. 20. This is in addition to the regular dividends (8 per cent.) paid during the past year.
Dubuque & Sioux City (leased to Illinois Central), 3 per cent., semi-annual, payable Oct. 15.
East Tennessee, Virginia & Georgia, 3 per cent. on all of the outstanding income bonds, payable Oct. 1.
Missouri Pacific, 1½ per cent., quarterly, payable Oct. 1. Transfer books close Sept. 15.
Chicago, St. Paul, Minneapolis & Omaha, 1½ per cent., quarterly, on the preferred stock, payable Oct. 20. Transfer books close Sept. 30.
Georgia, 2½ per cent., quarterly, payable Oct. 15. Transfer books close Sept. 15.
Lehigh Valley, 1½ per cent., quarterly, payable Oct. 15. Transfer books close Sept. 17.
Western Union Telegraph, 1½ per cent., quarterly, payable Oct. 15. Transfer books close Sept. 20.

Foreclosure Sales.

The *Framingham & Lowell* road was sold in South Sudbury, Mass., Sept. 10, under a judgment in favor of the Boston, Clinton, Fitchburg & New Bedford Company, and bought for \$379,212 by Mr. Marston, as attorney for the last-named company. The road was sold subject to a first mortgage for \$500,000, and to a lease to the Boston, Clinton, Fitchburg & New Bedford Company, assigned by that corporation to the Old Colony Company. The sale was made under a special act of the Massachusetts Legislature, under which a reorganization has been arranged. The road extends from South Framingham, Mass., to Lowell, 26 miles.
The *Peabottom Railroad, Eastern Division*, was sold under foreclosure Sept. 1 and bought for \$5,000 by a committee of bondholders. The road extends from Oxford, Pa., to Dorsey, 20 miles, and is of 3 ft. gauge. The bonded debt was \$240,000.
The *Peabottom Railroad, Western Division*, is to be sold by the trustees in December next. It extends from Delta, Pa., to York, 35 miles, and has a bonded debt of \$323,000.

Western Weighing Association.

The Western Weighing Association, organized Aug. 16, 1880, has had a prosperous year. The annual meeting was

held Sept. 6, at the Lakeside Building, Chicago, Mr. Horace Tucker, of the Illinois Central, in the chair. There were also present Messrs. H. C. Wicker, of the Northwestern; J. T. Sanford, Rock Island; E. P. Ripley, Burlington; George Olds, Chicago, Milwaukee & St. Paul; J. H. Malone, Wisconsin Central, and C. L. Rising, Wabash. Mr. J. R. Wheeler, the Superintendent, acted as Secretary, and reported that during the year over 420,000 car-loads of freight had been weighed.

The Association is gaining strength and importance daily. The rumor that it was to be disbanded is wholly false. Mr. Wheeler was given additional power as Superintendent, and will be allowed to engage any additional help.

Brotherhood of Locomotive Firemen.

The annual meeting of the Grand Lodge of the Brotherhood of Locomotive Firemen began at Paine Memorial Hall in Boston, Sept. 12. The session was opened by prayer and an address to the brotherhood by Rev. E. C. Bolles, of Salem, after which Mr. F. W. Arnold, of Columbus, O., the Grand, delivered his annual address. The order is reported to be in a flourishing condition, there being 96 lodges, representing nearly every state and territory, with a total membership of 3,600. During the past year 26 deaths have occurred, of which number 22 were caused by accidents. The total benefits paid to widows and families of deceased members during the year amounted to \$12,400.

The members of the Grand Lodge were formally welcomed by Mayor Prince, and invited to take a trip down the bay at the close of the convention.

The chief business on hand was the reconstruction of the Insurance Department on a more systematic plan. The week sessions, which are private, continued through the week.

ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio.—At the directors' meeting in Baltimore, Sept. 14, George W. Dobbin and James Carey Coale were chosen directors in place of John King, Jr., and C. Oliver O'Donnell, resigned.

Mr. John W. Davis was appointed Assistant to the First Vice-President. He has been for a year Assistant to the Third Vice-President.

Mr. George W. Frick, of Baltimore, was appointed General Manager of the Express and Telegraph departments, a new office.

Charles River.—This company was organized last week by the election of the following directors: D. U. Chamberlain, J. M. W. Hall, J. M. Hilton, H. O. Houghton, S. L. Montague, C. E. Raymond, Emmons Raymond, Edmund Reardon, Cambridge, Mass.; H. F. Woods, Quincy, A. Vinal, Somerville, Mass.; G. B. Wilbur, Newton, Mass.; F. G. Davis, Boston.

Chicago & Alton.—Mr. James A. Lyon is appointed Traveling Passenger Agent for the St. Louis District.

Chicago, Brazil & Ohio River.—The directors of this new company are: George B. Gurley, Arthur Holmes, A. D. Mellick, J. B. Bedford, F. E. Schuster, Chauncey Vibbard, George W. White.

Chicago, St. Paul & Omaha.—The directors of this new company are: L. D. Brady, Isaac N. Hardin, James L. Holden, Holmes Miller, Otis N. Shedd, Aurora, Ill.; George S. Bowen, Elgin, Ill.; Pindar F. Ward, Geneva, Ill.

Columbus, Hooking Valley & Toledo.—The organization of this consolidated company was completed Sept. 10, when the following directors were chosen: M. M. Greene, Columbus, O.; S. Burke, Charles G. Hickox, N. J. McKinnin, Cleveland, O.; C. W. Andrews, Youngstown, O.; J. W. Ellis, New York. The board elected M. M. Greene, President; S. Burke, Vice-President; W. M. Greene, Secretary; F. H. Medary, Treasurer. The following appointments were made, all of them being officers already on the road: Orland Smith, General Manager; J. A. Wilcox, General Counsel; George R. Carr, General Superintendent; T. J. Janney, Auditor; W. A. Mills, General Freight Agent; W. H. Harrison, General Passenger and Ticket Agent.

Danville & St. Louis.—The officers of this new company are: Malcolm Peters, President; H. A. Beckwith, Secretary; W. H. A. Brown, Treasurer. Office, No. 157 La Salle street, Chicago.

Great Western, of Canada.—Mr. George E. Stevens has been appointed Southwestern Traveling Passenger Agent at Kansas City, and Mr. A. G. Robinson Northwestern Traveling Agent at Chicago.

Iron Mountain & Helena.—At the annual meeting in Helena, Ark., Sept. 6, the following directors were chosen: Wm. Bailey, S. I. Clark, W. H. Howes, T. M. Jacks, G. D. Jaques, L. H. Mangum, Isaac Mayfield, W. N. Oliver, H. P. Rogers, N. Straub, Frank Trunkey, W. S. Webb, J. V. Westlake. The board elected Wm. Bailey President; W. N. Oliver, Vice-President; S. I. Clark, Secretary; N. Straub, Treasurer. Office in Helena, Ark.

Lake Shore & Michigan Southern.—Mr. T. J. McCarthy has been appointed Northern Traveling Passenger Agent, with headquarters in St. Paul, Minn.

Louisville, New Albany & St. Louis.—Mr. W. H. Field has been appointed Auditor of this company. All reports and communications relating to the Accounting Department will be made to him, at Louisville, Ky.

Mr. W. E. Haddox has been appointed Car Accountant, to take effect Sept. 12.

Mexican Central.—Mr. George H. Anthony has been appointed Superintendent of Construction. His address will be at El Paso, Texas. Mr. Anthony was recently on the Atchison, Topeka & Santa Fe.

Mexican Pacific.—The directors of this company are: John B. Frisbie, Mexico; Richard B. Colburn, Isaac E. Gates, Elizabeth, N. J.; Wm. R. Garrison, James B. Hawes, Henry Sanford, Gardiner Wetherbee, New York.

Missouri, Kansas & Texas.—Mr. Edward Courtney has been appointed General Road-Master, with headquarters at Denison, Tex. Mr. Courtney has been on the Illinois Central for 25 years, lately as Road Supervisor on the North Division.

Missouri Pacific.—A dispatch from St. Louis, Sept. 11, says: "Mr. France Chandler, a long time past General Passenger Agent of the Missouri Pacific Railroad, has been appointed General Passenger Agent of the entire Gould Southwest system of roads, and O. W. Ruggles, General Passenger Agent of the Iron Mountain has been appointed his assistant. D. S. H. Smith, Treasurer of the Texas & Pacific, has been made General Treasurer."

Pennsylvania Company.—A circular has been issued by Mr. William Stewart, General Freight Agent, giving the changes in the freight department of that road. The following gentlemen have been appointed Division Freight Agents: Mr. B. H. Ruble, Eastern Division, embracing the Pittsburgh, Fort Wayne & Chicago east of Crestline, the Massi-

lon & Cleveland, and the Cleveland & Pittsburgh east of Rochester, including terminal yards and depots.

Mr. William Borne, Western Division, embracing the Pittsburgh, Fort Wayne & Chicago, from Crestline to Chicago.

Mr. W. H. Stewart, Cleveland & Pittsburgh Division, embracing the Cleveland & Pittsburgh and all the branches west of Rochester connected therewith.

Mr. G. V. Maus, Erie & Ashtabula Division, embracing the Erie & Pittsburgh, the Ashtabula & Pittsburgh, the New-castle & Beaver Valley and Lawrence railroads.

Mr. Frank Janas, Toledo Division, embracing the North-western Ohio Railroad.

Pittsburgh & Western.—The board of directors of this company has been reorganized, and is now as follows: President, James Callery, Pittsburgh; Vice-President, Solon Humphreys, New York; directors, John W. Chalfant, John E. Downing, A. M. Marshall, H. W. Oliver, Jr., Jacob Painter, Pittsburgh; Walston H. Brown, J. C. Cummings, Joseph S. Harris, Gilbert G. Haven, Russell Sage, New York. The New York men are new directors, and represent the interest in the road now held by the Wabash, the New Jersey Central and the Rochester & Pittsburgh.

Pullman's Palace Car Co.—At the annual meeting in Chicago, Sept. 8, the following directors were chosen: John Crerar, J. W. Doane, Marshall Field, R. P. Flower, Amos T. Hall, Charles G. Hammond, George M. Pullman. The only new director is Mr. Doane, who succeeds Robert T. Lincoln, now Secretary of War. The board re-elected George M. Pullman President; Horace Porter, First Vice-President; A. B. Pullman, Second Vice-President; A. S. Weinsheimer, Secretary.

Richmond & Danville.—Mr. James H. Drake has been appointed Assistant General Freight Agent, with office in Richmond, Va. He has been Chief Clerk of the Freight Department for several years.

Rochester & Pittsburgh.—Mr. Charles Ackenhill has been appointed Chief Engineer for the contractors, and Mr. J. E. Miller Superintendent of Construction on the extension from Salamanca into Pennsylvania.

Rostraver.—The officers of this new company are: President, D. R. Davidson; Secretary and Treasurer, M. M. Bosworth; directors, H. C. Frick, Charles H. Spencer, G. B. Bosworth, John Guffy, W. C. Guffy. Office in Pittsburgh.

St. Paul, Minneapolis & Manitoba.—Mr. J. B. Power, formerly of the Northern Pacific, is appointed Land Commissioner in place of Charles E. Furness, resigned.

Sierra & Quincy.—The directors of this new company are: F. A. Benjamin, C. T. Fay, Charles Kohler, P. N. Lienthal, F. Weissenborn. Office at Quincy, Plumas County, California.

Southern Central.—At the annual meeting, Sept. 7, the following directors were chosen: W. C. Barber, C. Cady, E. D. Clapp, R. W. Clinton, J. W. Dwight, J. G. Knapp, J. N. Knapp, D. H. Marsh, R. A. Packer, Thomas C. Platt, C. L. Rich, C. N. Ross, E. D. Woodruff. The board elected Thomas C. Platt President; C. N. Ross, Vice-President; J. N. Knapp, Secretary; J. G. Knapp, General Superintendent; C. A. Warden, General Freight and Passenger Agent; J. N. Knapp, T. C. Platt, E. D. Woodruff, J. W. Dwight, C. L. Rich, C. N. Ross, E. D. Clapp, Executive Board. The offices are in Auburn, N. Y.

Tennessee Coal & Railroad Co.—At a meeting of the stockholders in Nashville, Sept. 13, the following directors were chosen: A. M. Shook, Tracy City, Tenn.; Nathaniel Baxter, Jr., A. S. Colyer, G. M. Fogg, Thomas O'Connor, James D. Porter, James C. Warner, George A. Washington, Nashville, Tenn.; E. P. Alexander, Louisville, Ky.; C. C. Baldwin, Thomas Evans, John H. Inman, B. R. Smith, New York. The board elected Nathaniel Baxter, Jr., President; A. S. Colyer, Vice-President; A. M. Shook, General Manager. The company, as now reorganized, is controlled in the interest of the Louisville & Nashville.

Toledo, Cincinnati & St. Louis.—Mr. Samuel P. Hazard has been appointed General Freight and Ticket Agent and Auditor, with office in Frankfort, Ind.

Topeka & Rich Hill.—The directors of this new company are: Alfred Ennis, Topeka, Kan.; W. L. Parkman, Ottawa, Kan.; Reuben Smith, H. H. Williams, Ossawatimie, Kan.; E. H. Brown, Girard, Kan.; Stephen Allen, D. A. Crocker, W. F. Dallas, Daniel Underhill, Pleasanton, Kansas.

Troy & Boston.—Mr. E. Crandell, late General Freight Agent, has been appointed Superintendent, in place of Eben E. Aldrich, deceased.

Mr. C. A. Nimmo has been appointed General Ticket Agent.

Union Pacific.—Mr. N. C. Ray, late on the Chicago, Milwaukee & St. Paul, is now Assistant Engineer on the Union Pacific, in charge of construction work in Boulder Cañon, with headquarters at Sugar Loaf, Boulder County, Col.

Western Weighing Association.—At the annual meeting in Chicago, Sept. 6, the following Executive Committee was chosen for the ensuing year: H. C. Wicker, George Olds, Horace Tucker, J. T. Stanford, A. C. Bird, J. H. Malone and F. B. Clarke.

PERSONAL.

—Mr. James Smith, General Freight Agent of the Chicago & Alton road, has resigned his position.

—Mr. James Harvey, Lost Freight Agent of the Michigan Central road, died quite suddenly in Chicago last week, of inflammation of the bowels.

—Mr. Franklin B. Gowen has issued a circular in London, announcing his intention of standing as a candidate for the presidency of the Philadelphia & Reading Company again at the annual meeting next January.

—It is reported that the position of Second Vice-President of the Baltimore & Ohio has been offered to Col. Thomas R. Sharp, formerly Master of Transportation of the road, and lately Receiver of the Long Island road.

—Mr. J. D. Hawks, Assistant Chief Engineer, and Mr. R. Freeman, Road-Master on the Eastern Division of the Lake Shore & Michigan Southern road, have resigned their respective offices to accept positions on the New York, West Shore & Buffalo road.

—Mr. George Nason, Superintendent of the Pensacola Division of the Louisville & Nashville road, died Sept. 9, after a short but severe illness. Mr. Nason had been on the Louisville & Nashville for some time, and was for years Agent for the Mobile & Montgomery, at Mobile.

—Hon. Isaac W. Scudder, formerly Counsel for the old New Jersey Railroad Company, and for several years a director of the present United New Jersey Railroad & Canal Company, died at his residence in Jersey City, Sept. 10,

aged 63 years. Mr. Scudder was for many years a prominent lawyer in New Jersey; he served one term in Congress, in 1873 and 1874.

—Mr. Dillard Ricketts, who died in Indianapolis, Sept. 8, aged 63 years, was well known in that city as an active business man for many years. He was formerly President of the Jeffersonville, Madison & Indianapolis Company, and for several years President of the Union Railroad Company, of Indianapolis. He was one of the first projectors of the bridge over the Ohio at Louisville.

—Mr. M. Alexander, for 25 years Road-Master of the Chicago, Rock Island & Pacific road, and for seven years past General Superintendent of the Road Department, has resigned his position and will retire from business altogether. On the occasion of his retirement the employees of the road presented Mr. Alexander with a valuable gold watch, and Mrs. Alexander with a very handsome silver service.

—Prof. George L. Vose, well known for his treatise on railroads, and recently distinguished for his efforts to bring to light the atrocious highway bridge constructions very commonly accepted in this country; also, we may add, a valued contributor to the *Railroad Gazette*, has resigned his professorship of civil engineering at Bowdoin College and accepted an appointment as Professor of Civil and Topographical Engineering at the Massachusetts Institute of Technology, Boston.

—In accordance with his previously announced intention, Mr. John King, Jr., last week presented to the Court his resignation as Receiver of the Ohio & Mississippi road. The proceedings in relation to the appointment of his successor, however, took such a form that Mr. King withdrew the resignation and asked for an investigation of his official conduct. The question at issue does not at all affect Mr. King's integrity in the administration of the trust, but his judgment in working the road in the interest of the Baltimore & Ohio.

—Major-General Ambrose E. Burnside died suddenly at his residence in Bristol, R. I., Sept. 13, aged 57 years. Gen. Burnside's career as a soldier as Governor and Senator is sufficiently well known; of his railroad experience we may say that for four years before the war he was with the Illinois Central, first as Cashier of the Land Department and afterwards as Treasurer of the company. He was interested in several railroads in Indiana, his native state, and served for a time as President of the Indianapolis & Vincennes and the Cincinnati & Martinsville companies; he was also for several years a director of the Illinois Central and President of the Rhode Island Locomotive Works in Providence.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

Eight months ending Aug. 31:		1881.	1880.	Inc. or Dec.	P. c.
Bur. Cedar Rap. & No.	\$1,380,496	\$1,285,940	I.	\$94,556	6.3
Central Pacific	14,807,926	12,318,196	I.	2,489,730	21.9
Chi. & Alton	4,693,628	4,894,180	D.	200,552	5.1
Chi., St. L. & N. O.	2,369,223	2,070,425	I.	298,798	14.4
Chi. & N. W.	13,232,032	11,957,023	I.	1,275,009	10.7
Chi., Ind., St. L. & Chi.	1,476,905	1,521,409	D.	44,504	2.9
Chi. & Springfield	615,849	591,352	I.	24,497	4.2
Cleve., Col., Cin. & Ind.	2,809,883	2,860,041	I.	50,158	1.8
East Tenn., Va. & Ga.	1,430,733	1,265,027	I.	165,706	13.1
Flint & Pere Marq.	1,199,671	987,062	I.	212,609	21.5
Great Western	3,449,482	3,261,025	I.	188,457	5.8
Ill. Cent., Ill. lines	4,119,647	4,082,440	I.	37,207	0.9
Iowa lines	1,089,838	1,078,446	I.	11,392	1.1
Ind., Bloom. & W.	780,384	780,672	D.	288	0.0
Ind., Dec. & Springf.	325,885	325,385	I.	500	0.2
Mem. & Charleston	752,651	641,262	I.	111,389	17.4
Mo., Kan. & Tex.	4,765,256	3,632,487	I.	1,132,769	31.2
Norfolk & Western	1,357,990	1,228,046	I.	129,943	10.6
Peoria, Dec. & Ev.	430,576	263,735	I.	166,841	63.2
St. L., A. & T. H., Belle-ville Line	477,492	428,877	I.	48,615	11.3
St. F., Minn. & Man.	2,750,722	1,942,720	I.	808,002	41.6
Scioto Valley	201,606	253,609	I.	52,003	25.8
Wab., St. L. & P.	8,901,855	7,567,301	I.	1,334,554	17.7

Month of July:		1881.	1880.	Inc. or Dec.	P. c.
Grand Trunk	\$171,808	\$178,319	D.	\$6,511	3.7
Net earnings	42,289	55,916	D.	13,627	24.3
N. Y. & New England	\$246,821	\$210,257	I.	\$36,564	17.4
Net earnings	90,091	.....	.....	.....	.....
Tol., Del. & Bur.	47,350	.....	.....	.....	.....

Month of August:		1881.	1880.	Inc. or Dec.	P. c.
Atchison, Top. & S. F.	\$981,000	\$974,228	I.	\$6,772	44.5
Bur. Cedar Rap. & No.	309,112	160,160	I.	148,952	30.6
Central Pacific	2,059,000	1,973,437	I.	85,563	4.3
Chi. & Alton	771,466	761,120	I.	10,346	1.4
Chi., St. L. & N. O.	257,700	224,747	I.	32,953	14.6
Chi. & Northwest	2,261,207	1,767,939	I.	493,268	28.0
Chi. & Springfield	81,084	88,629	D.	7,545	8.5
Cin. & Ind., St. L. & Chi.	229,858	223,478	D.	6,380	1.6
Cleve., Col., Cin. & Ind.	417,109	470,286	D.	53,177	11.3
East Tenn., Va. & Ga.	254,000	220,000	I.	34,000	15.5
Flint & Pere Marq.	157,364	130,487	I.	26,877	20.7
Ill. Cen., Ill. lines	649,984	594,946	I.	55,038	9.2
Iowa lines	182,402	137,809	I.	44,593	32.3
Ind., Bloom. & W.	117,955	116,731	I.	1,224	1.0
Ohio Div.	89,573	82,215	I.	7,358	8.9
Ind., Dec. & Springf.	64,644	51,184	I.	13,460	26.9
Memphis & Charleston	91,387	80,132	I.	11,255	14.1
Mo., Kan. & Tex.	750,508	494,574	I.	255,934	51.7
N. Y. & New England	267,515	249,885	I.	17,630	7.0
Norfolk & Western	190,682	179,947	I.	10,735	5.9
Peoria, Dec. & Ev.	86,249	45,151	I.	41,098	91.3
St. L., A. & T. H., Belle-ville Line	62,563	66,032	D.	3,469	5.3
St. F., Min. & Man.	414,954	232,630	I.	182,324	78.3
Scioto Valley	50,220	32,385	I.	17,835	55.8
Tol., Del. & Bur.	65,247	26,160	I.	39,087	150.3
Wabash, St. L. & P.	1,542,838	1,185,324	I.	357,514	30.2

First week in September:		1881.	1880.	Inc. or Dec.	P. c.
Hannibal & St. Jo.	\$47,880	\$54,324	D.	\$6,445	11.8
Louis. & Nashv.	225,800	190,300	I.	35,500	18.7
Mill. L. S. & W.	14,710	7,844	I.	6,866	88.0
St. L., I. M. & So.	175,700	166,254	I.	9,446	5.7
Wabash, St. L. & P.	340,600	245,125	I.	95,475	38.9
Week ending Aug. 27:		1881.	1880.	Inc. or Dec.	P. c.
Grand Trunk	\$41,928	\$44,013	D.	\$2,087	4.7
Week ending Sept. 2:	.....	.....	.....	.....	.....
Great Western	\$100,867	\$101,439	D.	\$572	0.5
Week ending Sept. 3:	.....	.....	.....	.....	.....
Chi. & Gd. Trunk	\$29,685	\$26,531	I.	\$3,154	11.8

Grain Movement.

For the week ending Sept. 3 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Northwestern		Northwestern shipments.		Atlantic	
Year.	receipts.	Total.	By rail.	P. c. by rail.	receipts.
1874	3,105,478	3,441,377	323,919	9.1	2,320,662
1875	3,747,319	3,829,677	1,498,529	39.2	3,113,091
1876	4,240,764	4,192,884	1,808,411	43.1	3,612,268
1877	5,015,253	4,598,694	993,998	21.6	4,745,601
1878	8,162,587	6,005,490	1,316,419	19.9	6,844,950
1879	7,759,569	5,137,970	1,445,917	25.1	7,321,212
1880	6,677,269	6,323,361	2,132,330	33.7	6,337,127
1881	8,120,758	5,104,550	2,517,303	49.3	5,431,682

Thus the receipts of the Northwestern markets were

larger this year than in the corresponding week of any previous year. Their total shipments, however, were the smallest for four years, though their rail shipments were largest. The receipts of the Atlantic ports were also the smallest for four years. Compared with the previous week of this year there is an increase in Northwestern receipts, but a large decrease in Northwestern shipments and a small one in Atlantic receipts.

Of the total Northwestern receipts Chicago had 57.8 per cent., St. Louis 11.2, Peoria 9.5, Toledo 7.9, Milwaukee 5.9, Detroit 4.3, Duluth 1.8, and Cleveland 1.6 per cent. Chicago's receipts have not often been exceeded; St. Louis are a little less than its average recently. The wheat receipts are increasing; they are largest at Chicago and Toledo; but Detroit for the first time this summer appears as a large wheat receiver, and evidence that the new crop of Michigan is coming forward. About three-fourths of the corn receipts come to Chicago, but little more than a third of the wheat.

Of the Atlantic receipts New York had 50.7 per cent., Baltimore 14.6, Philadelphia 13.0, Boston 10.3, Montreal 9.3, New Orleans 1.9, and Portland 0.2 per cent. The elevator blockade at Baltimore explains the large decrease there compared with the previous week.

Up to Sept. 3 the Northwestern receipts this year have been about 16,000,000 bushels (8% per cent.) less than last year, while the Atlantic receipts have been 40,000,000 bushels, or nearly 20 per cent. less.

Exports from Atlantic ports for five successive weeks have been:

Week Ending—						
1881.	Sept. 7.	Aug. 31.	Aug. 24.	Aug. 17.	Aug. 10.	Aug. 3.
Flour, bbls.	88,844	83,408	106,193	71,111	75,094	75,094
Grain, bus.	2,843,132	3,845,590	4,138,884	4,019,291	4,597,008	4,597,008
1880.						
Flour, bbls.	84,113	88,149	110,191	97,585	71,183	71,183
Grain, bus.	6,234,512	6,743,355	6,444,497	8,161,282	6,495,959	6,495,959

The exports for the last week are the smallest reported for a long time.

For the week ending Sept. 9 receipts and shipments at Chicago and Milwaukee were:

Receipts.			
1881.	1880.	1881.	1880.
Chicago.....	4,011,980	2,984,074	2,577,250
Milwaukee.....	401,200	274,616	450,015

This is an increase in the two places of 1,154,490 bushels (35% per cent.) in receipts, but a decrease of 412,337 bushels (14 per cent.) in shipments.

For the same week ending Sept. 9 receipts and shipments at Buffalo have been:

Receipts.			
1881.	1880.	1881.	1880.
By water.....	2,075,000	3,398,000	1,001,630
By rail.....	87,600	632,800	1,710,500
Total.....	2,947,600	3,331,400	2,804,600

Receipts both by lake and rail show a large decrease this year; canal shipments are not one-half as great as last year, but rail shipments are 30 per cent. greater.

For the same week ending Sept. 9 receipts at four Eastern ports were:

New York. Boston. Philadelphia. Baltimore. Total.					
1881.	1880.	1881.	1880.	1881.	1880.
P. c. of total.....	3,302,257	501,503	766,600	974,552	5,544,912
1880.....	59.5	9.0	14.0	17.5	100.0
P. c. of total.....	3,471,040	678,300	675,590	688,182	5,513,022
1880.....	59.7	11.7	11.6	17.0	100.0

The changes in percentages compared with last year are unimportant. Of the receipts at New York 1,315,290 bushels (40 per cent.) were by canal this year, against 2,412,500 (69.5 per cent.) last year.

San Francisco wheat exports in August were 2,731,813 bushels. For the two months of the California crop year beginning July 1, the exports were: 1881, 4,766,397 bushels; 1880, 863,237 bushels; increase, 3,903,160 bushels, or 452.2 per cent.

Exports of California barley in the two months ending Aug. 31 were: By sea, 4,482 centals; by rail, 7,425 centals; total, 11,908 centals; a very large decrease from the corresponding period last year.

Coal Movement.

Anthracite tonnages for the eight months ending Sept. 3 are reported as follows, the tonnage in each case being only that originating on the line to which it is credited:

	1881.	1880.	Inc. or Dec.	P. c.
Phila. & Reading.....	4,428,827	3,642,919	I.	785,908 21.6
Northern Central.....				
Shamokin Div. and Summit Br. R. R.....	681,803	511,462	I.	370,338 72.3
Sunbury, Hazleton & Wilkesbarre.....	7,872	6,831	I.	1,045 15.1
Pennsylvania Canal.....	277,975	281,861	D.	3,886 1.4
Central of N. J., Lehigh Div.....	2,928,415	2,219,847	I.	708,568 31.9
Lehigh Valley.....	2,621,864	2,706,522	I.	85,342 30.9
Pennsylvania & N. Y.....	62,354	23,234	I.	39,120 168.5
Del. Lacka. & West ern.....	2,769,186	2,174,595	I.	594,591 27.3
Del. & Hudson Canal Co.....	2,333,341	1,889,437	I.	443,904 23.5
Pennsylvania Coal Co.....	879,857	670,358	I.	209,499 31.2
State Line & Sullivan.....	42,226	29,398	I.	12,828 43.6

Total anthracite..... 18,033,921 14,215,454 I. 3,818,467 26.9

The tonnage of anthracite for the corresponding period for six years has been:

1881.....	18,033,921	1878.....	12,831,629
1880.....	14,215,454	1877.....	10,737,415
1879.....	10,344,956	1876.....	16,972,744

Anthracite production seems likely to be limited by the scarcity of water at many of the collieries.

The anthracite coal tonnage of the Belvidere Division, Pennsylvania Railroad, for the eight months was as follows:

	1881.	1880.	Increase.	P. c.
Coal Port for shipment.....	41,339	27,533	13,806	50.2
S. Amboy for shipment.....	441,273	277,495	163,778	48.3
Local distribution on N. J. lines.....	461,354	320,415	140,939	44.0
Co.'s use on N. J. lines.....	73,620	69,623	4,000	6.7

Total..... 1,017,586 714,465 303,121 42.4

Of the total this year 832,631 tons were from the Lehigh region, and 184,955 tons from the Wyoming region.

Actual tonnage of anthracite passing over the Pennsylvania & New York road for the nine months of its fiscal year, from Dec. 1 to Sept. 3 was: 1881, 772,716; 1880, 477,536; increase, 295,180 tons, or 61.8 per cent. Of the total this year 483,736 tons came from the Lehigh Valley road.

Semi-bituminous tonnages reported for the eight months were as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Cumberland.....	1,305,331	1,354,296	I.	11,035 0.8
Huntingdon & Broad Top.....	141,791	126,073	I.	15,718 12.5
East Broad Top.....	53,019	44,954	I.	8,065 17.9
Tyrene & Clearfield.....	1,610,606	1,060,013	I.	550,593 51.9
Belleville & Snow Shoe.....	70,286	37,334	I.	32,952 89.1

Total semi-bituminous..... 3,241,093 2,622,670 I. 618,423 23.6

Of the Cumberland coal this year the George's Creek & Cumberland road carried 87,368 tons.

Actual tonnage passing over the Huntingdon & Broad Top road for the eight months was:

	1881.	1880.	Increase.	P. c.
Broad Top coal.....	141,791	126,073	15,718	12.5
Cumberland coal.....	203,953	172,213	31,740	18.9
Total.....	345,744	298,286	47,458	15.9

The Broad Top coal is mined on the line; the Cumberland carried through for the Pennsylvania Railroad.

Shipments of Cumberland coal away from the region were as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Balt. & Ohio R. R.....	883,057	818,802	I.	64,255 7.8
Bedford Div. Pa. R. R.....	177,940	146,441	I.	31,499 21.6
Ches. & Ohio Canal.....	303,501	354,811	D.	51,310 14.5

Total..... 1,364,498 1,320,054 I. 44,444 3.4

Bituminous tonnages reported for the eight months are:

	1881.	1880.	Inc. or Dec.	P. c.
Barclay R. R. & Coal Co.....	320,198	332,046	D.	11,848 3.6
Allegheny Region, Pa. R. R.....	180,499	217,179	D.	36,680 16.9
Penn. and Westmoreland.....	602,391	668,454	D.	66,063 9.9
West Penna. R. R.....	203,504	183,792	I.	19,712 10.7
Southwest Penna. R. R.....	18,205	32,865	D.	14,660 44.6
Pittsburgh Region Pa. R. R.....	434,193	358,295	I.	75,898 21.2

Total bituminous..... 1,758,990 1,792,601 D. 33,611 1.9

The coal tonnage of the Pennsylvania Railroad for the eight months was as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Anthracite.....	903,784	720,072	I.	183,712 25.5
Semi-bituminous.....	2,003,745	1,363,864	I.	639,881 46.9
Bituminous.....	1,438,762	1,400,555	D.	38,207 2.7
Coke.....	1,642,870	1,222,817	I.	420,053 34.3

Total..... 5,989,191 4,707,308 I. 1,281,883 25.7

Total tonnage for August, 910,335 tons. This includes the main line from Philadelphia to Pittsburgh and branches, but not the Philadelphia & Erie.

Coal tonnage of the New York canals from the opening to Sept. 3 was:

	1881.	1880.	Inc. or Dec.	P. c.
Anthracite.....	577,702	473,595	I.	104,107 22.0
Bituminous.....	131,823	143,730	D.	11,907 8.3
Total.....	709,525	617,325	I.	92,200 14.9

The canals opened May 17 this year and April 20 last year, nearly a month earlier.

Coke tonnages reported for the eight months are as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Snow Shoe and Clearfield.....	66,467	41,734	I.	24,733 59.0
Allegheny Region, Pa. R. R.....	134,810	87,089	I.	47,721 54.8
Penn. and Westmoreland.....	80,245	57,418	I.	22,827 40.0
West Penna. R. R.....	948,462	705,404	I.	243,058 34.5
Pittsburgh Region, Pa. R. R.....	406,307	331,690	I.	74,617 22.5

Total coke..... 1,642,870 1,223,335 I. 419,535 34.3

Chicago coal receipts to Aug. 31 were as follows:

By rail. By lake.			
1881.	1880.	1881.	1880.
Anthracite.....	351,220	222,466	128,754 36.7
Bituminous.....	1,395,728	1,034,839	360,889 34.9
Total.....	1,746,948	1,257,305	489,643 39.0

The total receipts of anthracite this year were 668,556 tons; bituminous, 1,546,761 tons. The increase of anthracite receipts by rail is notable. Shipments by lake and rail were 404,798 tons.

Coal shipments over the Seattle & Walla Walla road and by sea from Seattle, Wash. Ter., in August were 13,751 tons. For the eight months ending Aug. 31 they were: 1881, 95,330; 1880, 90,172; increase, 5,158 tons, or 5.7 per cent.

Passenger Rates to the Atlanta Cotton Exposition.

To accommodate visitors to the Atlanta Cotton Exposition the roads concerned have made an excursion rate of \$36 from New York to Atlanta, Ga., and return. These excursion tickets will be sold during October, November and December, and will be good to return within 90 days from the date of purchase. Corresponding rates will be made from other points.

Trans-Atlantic Passenger Travel.

The current belief that trans-Atlantic travel has been unusually heavy this year is confirmed by statistics compiled by the New York *Shipping Gazette* and *Travelers' Guide*. During the busy season beginning with April and ending with July the Cunard line carried 3,435 cabin passengers to Liverpool; the White Star line, 2,935; the Inman line, 2,210; the National line, 1,287 by its Liverpool steamers and 389 to London; the Guion line, 1,805 to Liverpool; the Anchor Line, 3,007 to Glasgow and 407 to London; the State line, 1,549 to Glasgow; the Great Western Steamship Company, 100 to Bristol; the North German Lloyd Steamship Company, 2,464 to Bremen; the Hamburg line, 2,182; the General Trans-Atlantic Company, 1,246 to Havre; the Red Star line, 453 to Antwerp, and the Rotterdam line 776. The total is 28,245 cabin passengers during the four busy months, against 19,496 in the same months last year. Not a life has been lost during the season.

The St. Lawrence Grain Route.

A telegram to the *Chicago Tribune*, from Prescott, Ont., which is opposite Ogdensburg, N. Y., and more than one-third the way down the St. Lawrence from Lake Ontario to Montreal, says:

"The new scheme to carry grain between this port and Chicago is still being agitated. The failure to get 14 ft. of water, as promised, in the Welland Canal has caused a portion of the scheme to be delayed until that depth can be relied on—that is, the lake fleet part of the scheme. But the elevator and river fleet of barges are to be gone on with without delay. It is proposed to organize a company to put up this fall four floating elevators, and to build sufficient barges to transfer a million bushels per month at this point. The town is to be asked to pledge itself for \$30,000 to \$50,000 subscription to the original company, this amount to be advanced to the new scheme to enable it to begin operations at once, and also to donate sufficient land and river frontage to the company and an exemption from taxation for ten years."

Chicago and Milwaukee Receipts.

For the week ending Sept. 7 receipts at Chicago and Milwaukee have been, for four successive years:

	1878.	1879.	1880.	1881.
Chicago:				
Grain, bus.....	4,466,634	3,756,087	2,928,233	4,285,079
Flour, bbls.....	41,955	48,037	49,420	87,713
Hogs, No.....	77,847	62,545	79,596	95,424
Milwaukee:				
Grain, bus.....	492,313	575,065	297,016	446,570
Flour, bbls.....	26,424	19,126	33,890	52,862
Hogs, No.....	2,960	3,209	4,659	9,266

In 1878 the receipts of grain for the week were a little

larger than this year, but taking grain and flour together the receipts are larger this year than in any other, and nearly 50 per cent. more than last year.

Passenger Rates

The passenger war continues with renewed vigor, and there is now a general cutting of rates from Chicago and St. Louis eastward, as well as from New York westward. The Pennsylvania Railroad has extended its \$7 Chicago rate to Philadelphia, Baltimore and Washington as well as New York, and this action will be generally followed.

Cotton.

The Chicago, St. Louis & New Orleans road reports its deliveries of cotton at New Orleans to have been as follows each crop year (ending with August), for ten years, in bales:

Year.	Bales.	Year.	Bales.
1871-72.....	198,250	1876-77.....	300,405
1872-73.....	271,537	1877-78.....	333,397
1873-74.....	280,496	1878-79.....	275,459
1874-75.....	243,301	1879-80.....	401,537
1875-76.....	306,006	1880-81.....	422,027

Thus the amount has more than doubled in ten years, and has increased 40 per cent. in four years, which, considering the fact that there has been no increase in the mileage of the road, and but a moderate increase in the population of the country through which the road runs, is certainly very remarkable progress. Most of the cotton carried by the road is grown in Mississippi and Tennessee, and from 1870 to 1880 the census shows an increase of 36% per cent. in the population of Mississippi and of 22% per cent. in that of Tennessee.

Canal Traffic.

Canal business for the first week of September shows the following results:

	1881.	1880.	Increase.	P. c.
Tons shipped.....	169,656	204,796	35,140	17.1
Tons cleared by boats.....	215,556	331,349	115,793	53.0
Tolls.....	\$18,597	\$37,915	\$19,318	51.0

The tonnage shipped of leading items of freight was:

	1881.	1880.	Inc. or Dec.	P. c.
Lumber.....	43,847	49,155	D.	5,308 10.8
Grain.....	2,542	68,261	D.	39,419 57.0
Coal.....	44,116	32,041	I.	12,075 37.0
Iron.....	24,311	19,240	I.	5,071 26.3
Sugar and molasses.....	143	1,893	D.	1,750 92.0

RAILROAD LAW.

The Minnesota State Railroad Bonds.

A dispatch from St. Paul, Minn., Sept. 11, says: "The Supreme Court to-day rendered a unanimous decision, in which it settles two pre-eminent and principal questions in regard to the Minnesota state railroad bonds. First—it holds that the question presented to it is primarily whether a writ of prohibition can issue to restrain the tribunal created by the law of last winter from action. The Court says it is first met by the objection that the act of last winter is void because the constitutional amendment of 1860, declaring that no provision shall ever be made for the payment of the state railway bonds without a submission to the people, prohibited the Legislature from passing the act in question, which was a measure making provision for the payment. The validity of the amendment of 1860 is thus directly involved. If valid, it withdrew from the Legislature the power to make provision for the payment of the bonds, while if void, of course, it could interpose no obstruction. If invalid, it is upon the ground that it impairs the obligation of contracts, and so is in violation of section

director's car, one Credit Valley parlor car and one first-class coach, and was drawn by Manchester engine No. 10, with Engineer Tout and Conductor Brady in charge.—*Toronto Globe*, Sept. 12.

Traveling Forts.

The *Chicago Tribune* paragrapher reassures timid travelers, frightened by the recent train robberies, as follows: "The trouble on the Alton Railroad is only temporary. A number of fine safety deposit cars are now being built, and when they are completed no fear of train robbers need be felt. Each passenger will be locked in a chilled steel casket before the train reaches Missouri, and on reaching the state line will be unlocked and set at liberty again by officials of the road stationed at that point. It is believed that by adopting this plan the James boys will eventually be obliged to work for a living."

Railroad Wages in New Zealand.

The official statement gives the wages of employés on the railroads in the colony of New Zealand, which are owned by the colony, as follows: Guards (conductors), first-class, \$2.18 to \$2.42 per day; second-class guards and brakemen, \$1.93 to \$2.05; shunters, signalmen and storemen, \$1.70 to \$2.42; porters, first-class, \$1.70 to \$1.82; porters, second-class, \$1.45 to \$1.57; laborers in shops and engine-houses, \$1.45; machinists and fitters, \$1.93 to \$2.54; apprentices, \$1.93 to \$5.80 per week; cleaners, \$1.21 to \$1.70 per day; firemen, \$1.82 to \$2.18; engine drivers, \$2.42 to \$2.90; leading drivers, \$3.15; trackmen, \$1.93 to \$2.42; sub-inspectors of tracks, \$2.64 to \$4.12, according to size and importance of their district. In all other cases, except machinists and fitters, the pay varies with length of service, an increase of 12 to 24 cents a day being given each year until the maximum is reached.

Junior or cadet clerks get from \$242 to \$510 per year; full clerks, from \$580 to \$1,210 per year; a few special clerks get \$1,450 a year. Station agents get from \$620 to \$1,210 per year, according to the importance of the station.

Employment on the railroads is reported to be in demand; there are few vacancies, and a position is not easily obtained.

A Negligent Engineer.

A dispatch from Vincennes, Ind., Sept. 9, says: "Last night Sheriff Ryan, of Lawrence County, arrested Joseph W. Gardner in this city upon the charge of murder found against him by the Grand Jury of Lawrence, Ill. Gardner is an engineer on the Ohio & Mississippi Railway, and through negligence a few weeks ago caused a collision between here and Lawrenceville, in which Dr. Ralf, living near Olney, was killed."

Fresh Beef in Refrigerator Cars.

The *Boston Journal* has the following regarding the successful manner in which fresh beef is now being shipped from Chicago to Eastern markets: "In Quincy Market yesterday, dealers in fresh meats were examining with a good deal of interest samples of dressed beef which were brought through from Chicago in a Tiffany refrigerator car in six days. The beef was as fresh and bright as if it had been brought from Brighton, and the market men pronounced it as desirable in every respect. Chicago dressed beef has been coming to this market for several years past, but there has always been a prejudice against it, as the facilities for bringing it here in strictly prime order during the hot weather were not satisfactory. But it seems that all the difficulties have been overcome and that beef killed in Chicago can be laid down here in six or seven days in perfect condition. This is a matter of some importance to the public, for if fresh beef can be brought here from the West and delivered to the consumer in as good order as the beef killed in this vicinity, it must lower the price, as the cost of bringing it here will be much lower than on live cattle. This car-load was shipped when the temperature outside was at 80, and brought here over the National Dispatch line on a Tiffany car, whose temperature was from 42 to 44."

A Delicate Case.

One of the great French railway companies has on its hands at present a lawsuit, certainly of a very novel kind, and of which the details will be racy. A few months ago a wheel of one of its carriages broke; the train ran off the track and two persons were wounded—fortunately only slightly wounded. One of these was an old half-pay officer, who had his wrist sprained, and although very blasphemous at the moment of the accident, exhorted his rage in immediate oburgation; the other was a little actress, who has played the "Pneumatic Clock," or "The Talisman Bracelet," or "The Phylloxera," or some other equally important part in half a dozen theatrical *revues*, where the chief requisites are a pretty face and a good figure. Mlle. X. was injured in the face; a fragment of broken glass chipped off an infinitesimal slice of her nose—an adorable little nose. You may imagine her shrieks of despair when, after a series of hysterics, she looked in the mirror. "It's all over, it's all over!" she screamed; "I am horrible; I am disfigured for life; I am no longer good for anything!" In point of fact she was neither "horrible" nor "disfigured for life," and the best proof that she was neither is that the circle of her admirers has not diminished since the mishap; still, considering her social position, it must be admitted the adventure was disagreeable. She returned to Paris and at once, of course after another nervous attack, asked the company for "incapacité de travail," caused by the accident. She did not specify in the summons the nature of the "work" for which she declared herself "incapacitated," but it must have been something very important, as her claim estimated her losses at the round sum of 200,000fr. The board of directors were astounded, as you may suppose; 200,000fr. for an insignificant scar on the end of a nose, the very idea was the grossest of absurdities! "Don't give the hussy a centime," voted one stern member; "she has gained by notoriety more than she has lost, the wretched stork!" His colleagues, however, did not vote with him; they were disposed to be gallant, and so, with the best intentions in the world, decided on offering an indemnity of 1,000fr. Her friends aver that there was not a bit of unbroken china in her apartment five minutes after she had received notice of this munificent proposal. Ten minutes after its reception she was closeted with her solicitor, who was moved to tears likewise as he listened to her sad explanations of the loss of her career, blighted at its inception by the terrible disaster. She would have preferred the loss of her entire nose to having it thus shorn of its charms, diminished and deformed! What parts could she now aspire to on the stage, what friendships could she now hope for in society? Her situation was absolutely worthy of pity. Among the documents given to her counsel are a number of photographs as she was before that train ran off the track; a carefully drawn up statement of her financial condition, as it is, and as it was during preceding years—the poor creature has been obliged to put down her carriage and reduce her domestic *personnel*—and, most curious of all, a copy of verses written by a well-known poet, once among her bondsmen, in which the perfections of her nose were especially vaunted. How will the tribunal decide; at what figure will it estimate the exact value of this lovely creature's

beauty? The case seems delicate and embarrassing, for modern propriety will prevent the resort to that *argumentum ad hominem* which the artist has immortalized in his famous picture "Phryne before her judges."—*Paris Correspondence New York Times*.

An American Invention in Cuba.

At the recent exhibition at Matanzas, Cuba, a gold medal was awarded for a combination car used on portable railroads, which is the invention of Mr. Thomas F. Krajewski, formerly of the Grant Locomotive Works and the *Railroad Gazette*. The jury's report says that "Krajewski's car solves a problem to the sugar industry, which to-day more than ever requires a reduction in the cost of production."

The Arlberg Tunnel.

The *London Standard* says of the new tunnel now in progress under the Alps in the Arlberg pass:

"The Arlberg is, indeed, one of those Alpine passes of which the foot is better known than the summit. The iron horse has not yet reached its base, and though this road, blasted in places through the Alfenzthal out of the solid rock, is sufficiently picturesque, most travelers bound for the Tyrol prefer the roundabout railway journey by way of Munich and Innsbruck, to having their bones shaken in the diligence that ply between Bludenz and the pleasant town on the Inn. But in many respects this spot, which is now being pierced, is geographically far more important than some others of more historical note. It is the watershed of the two greatest rivers of Europe, and may thus be fairly entitled to the distinction of holding, as it were, the balance between the Northern and Southern Germanic states. To the one belongs the waterway which, after coursing through the fairest portion of Europe, creeps between mud flats and Dutch sluices into the German Ocean. To the other, the still greater river, which, after supplying ports to so many states, discharges itself into the Black Sea, and is, therefore, almost lost to commerce."

"The contractors who have undertaken to bore through the Arlberg have a less difficult task before them than that presented to M. Favre and his colleagues, and still less arduous than that of the tunneler of Mont Cenis, for they have the experience of their predecessors to guide them. Nor can the cost be, yard for yard, more. For what amount the Arlberg tunnel will actually be completed it would be rash to affirm. The St. Gothard boring—or, rather, the succession of 59 tunnels of which the work consists—has absorbed, it is said, \$26,800,000. But the obstacles which unexpectedly intervene to retard the progress of such undertakings are always unknown factors in calculating their price. Already, the firms engaged in piercing the Arlberg have for several months been unable to fulfill the exact terms of their contract, which stipulated that they were to excavate something like 10 ft. per diem. Up to May their progress was not so great as this, especially on the western side of the mountains, where the rocks are tougher than those on the eastern slope. The work was further impeded by the inrush of immense quantities of water; but this enemy of the engineer having been subdued, the undertaking is now proceeding at an even more rapid rate than that prescribed in the bond. Altogether nearly 6,000 yards have been bored, the greatest headway being, however, made on the eastern side, where the tunnel is already considerably more than 3,000 ft. from the surface. It must, therefore, be a long time before it can be utilized for traffic purposes. For even after the main task is completed the approaches have still to be made, and a hundred difficulties overcome, such as those which have hitherto prevented the utilization of the St. Gothard boring. Once completed, however, it will afford a quick route from Switzerland and France to the western provinces of Austria. The first region to be benefited by the railway running under the Arlberg will, of course, be the Vorarlberg, but Salzburg, Styria, Upper and Lower Austria, Tyrol, and Istria will all be tapped by it."

OLD AND NEW ROADS.

Baltimore & Ohio.—At the monthly meeting of the board, Sept. 14, the Committee on Finance presented its report, with a resolution that the agreement made on Aug. 23, between the Baltimore & Ohio Railroad Company and John S. Barbour, acting for himself and his associates, be confirmed. After a long statement by Mr. Garrett in regard to the policy and action of the Baltimore & Ohio Railroad is making connections with Southern roads, the resolution of the Finance Committee was unanimously adopted. The agreement provided for the sale of a portion of the interest of the Baltimore & Ohio Company in the Virginia Midland system, the control of which for some time had been held by the Baltimore & Ohio Company. Mr. Garrett stated that in this transfer the interest of his road and the city of Baltimore had been duly provided for.

Boston, Revere Beach & Lynn.—This company will soon begin work on a second track, and expects to complete it from East Boston to Winthrop this fall, and from Winthrop to Lynn next spring. Two locomotives and a number of passenger cars have been ordered, to be delivered in time for next summer's business.

Bucksport & Bangor.—A survey has been completed for the extension from Bucksport, Me., to Ellsworth. A contract for the building of the line has been let to John C. Brown, who will soon begin work.

Buffalo, New York & Philadelphia.—A dispatch from Olean, N. Y., says: "There are a number of narrow-gauge railroads gridironing the northern petroleum fields of Western Pennsylvania, and it is proposed to consolidate these roads under one management, and to operate them as a grand oil-region trunk line. It is ascertained that the Buffalo, New York & Philadelphia, the Olean, Bradford & Warren, and the Kendall & Eldred railroads have, in conjunction with a syndicate of German bankers operating in New York City, purchased the Bradford, Bolivar & Kendall, the Bradford, Cuba & Wellsville, and the Friendship & Bolivar railroads. Some stockholders of the Bradford, Bolivar & Kendall line have been called upon for their stock, but the officials will soon be under a single directory, though the purchase of the roads may not yet be consummated."

Burlington & Missouri River in Nebraska.—On the Republican Valley Division track is now laid to Culbertson, Neb., 34 miles westward from the late terminus at Indianola, and 183 miles from the main line at Hastings. Contracts are reported let for 100 miles west of Culbertson. If true, this is an important extension, indicating that there is some truth in the rumors of an extension of the road to Denver.

Chicago, Brazil & Ohio River.—This company has filed articles of incorporation to build a railroad from Hebron, in Porter County, Ind., southward to Jasper, in Dubois County, about 250 miles. The line runs nearly the whole length of the state, and is parallel to its western boundary.

Chicago, Milwaukee & St. Paul.—Work has been begun on a branch line 22 miles long, from Spencer, in Clay County, Ia., to Spirit Lake, in Dickinson County.

Chicago, Mt. Vernon & Southern.—This company has filed articles of incorporation for a railroad from Alton, Ill., to Cairo, with a branch to Tamaroa. The capital stock is \$3,000,000 and the incorporators are J. A. Creighton, Seth E. Crews, George M. Haynes, George H. Varnell and Bluford Wilson.

Chicago, Rock Island & Pacific.—Track is now all laid on the loop line from Davenport, Ia., by Buffalo to Wilton. It is 26½ miles long, and gives the Southwestern Division and the Oskaloosa Branch a connection with the main line at Davenport 10½ miles shorter than the old line by Wilton, and with better grades. In connection with the Oskaloosa Branch and the Keokuk & Des Moines Division the new loop completes a second line from Davenport to Des Moines only six miles longer than the present main line, which can very well be used as a loop or second track for through business. The new line will be opened for business about Oct. 1, when the ballasting will be finished.

Chicago, St. Paul & Omaha.—This company has filed articles of incorporation in Illinois to build and operate a line of railway from Chicago in a westerly direction to the northern boundary of Illinois. This line, as projected, will be about 140 miles in length. Another line to be constructed by this company will extend from a point upon the line described, in Du Page County, in a southerly and westerly direction to the western boundary of the state opposite Muscatine. The first of these lines will be designated the main line of the St. Paul Division and the second will be designated the main line of the Omaha Division of the proposed railway. The latter is projected for a distance of about 150 miles. The company also proposes to construct the South Chicago Branch, extending to the eastern line of the state near Lake Michigan, 10 miles; a branch from the main line, near Fox River, to Batavia, Geneva, St. Charles and Elgin, 20 miles; a branch from the main line, near Rock River, to Sycamore, 5 miles; a branch from the main line in Ogle County to Rockford, 15 miles; a branch from the main line in Ogle County to Polo and thence to the Mississippi River, 55 miles; a branch from Plainfield, Will County, to Joliet, and thence to the coal fields in Will County, 35 miles; a branch from Lisbon, Kendall County, to Streator, with a sub-branch to Morris, 35 miles; a branch from the main line in La Salle County to Ottawa, 8 miles; a branch from the main line in La Salle County to the towns of La Salle and Peru, 10 miles, and a branch from the main line to Rock Island and Moline, 12 miles.

Cincinnati & Eastern.—Track on this road is now laid to Tranquility, O., 5½ miles eastward from the late terminus at Winchester, and 58½ miles from the junction with the Cincinnati Northern road. Work is in progress on another section from Tranquility to Newport, 5½ miles.

Cincinnati, Indianapolis, St. Louis & Chicago.—The reported sale of a controlling interest to the Chesapeake & Ohio syndicate is officially denied. No such sale has been made and the parties who control the company mean to maintain its independence, while quite ready to enter into friendly agreements with the Chesapeake & Ohio or any other parties who will bring business to the road.

Cincinnati Southern.—The parties to whom the lease of this road has been awarded have filed certificates of incorporation in Ohio as the Cincinnati, New Orleans & Texas Pacific Company. The capital stock is \$3,000,000. The incorporators are Frederick Wolfe, Montgomery, Ala.; Theodore Cook, Aaron W. Goldsmith, Edgar M. Johnson, Cincinnati; Charles A. Page, Boston.

Cleveland, Columbus, Cincinnati & Indianapolis and the Cincinnati, Hamilton & Dayton.—Certificates of the consolidation of these roads have been filed in Ohio, and the organization of the consolidated company, the Ohio Railroad Company, will be completed Oct. 20, when directors will be chosen. The consolidation includes the Cincinnati, Hamilton & Dayton's leased lines, the Cincinnati, Richmond & Chicago, the Cincinnati, Hamilton & Indianapolis and the Dayton & Michigan. The capital stock of the new company will be \$20,000,000, on 817 miles of road.

Clinton, Poplar Creek & Huntsville.—This company has been organized to build a railroad from Clinton, Tenn., on the Knoxville & Ohio, by Donovan's Gap and Huntsville, to Helmwood on the Cincinnati Southern.

Credit Valley.—This Canadian road is now completed to a connection with the Canada Southern at St. Thomas, Ont., 26 miles beyond the late terminus at Ingersoll, and 123 miles west by south from Toronto. The company now has in operation the main line from Toronto to St. Thomas, 123 miles; the branch from Streetsville to Orangeville, 35 miles; and the branch from Church's Falls to Elora, 27 miles, making 185 miles in all. From Toronto to Woodstock, 87 miles, the line is diagonally across the country between the Grand Trunk and the Great Western, and from Woodstock to St. Thomas between the Great Western and the Canada Southern.

Creve Coeur Lake Extension.—This company has been organized to build a road from Crève Coeur Lake, Mo., southwest to a point on the Missouri suitable for a ferry and thence into Franklin County.

Cumberland Valley.—This company is now securing the right of way for its extension from Martinsburg to Winchester, Va., and it is expected that work will be begun soon.

Denver & Rio Grande.—Some surprise was expressed on Wall street last week at the discovery that bonds of this road were in the hands of holders which had numbers much higher than any listed at the Stock Exchange. President Palmer explains that bonds have been sold in blocks by subscription and issued to the purchasers, in advance of construction, while the new bonds could only be listed as the new road was completed, the issue being at the rate of \$15,000 per mile of completed road. The new bonds will be listed as soon as possible after the completion of the lines built with their proceeds.

Des Moines Northwestern.—Track on this road is now laid to Jefferson, Ia., 24 miles north by west from the old terminus at Panama, and 53 miles from the starting point of the road at Waukegan. Grading is in progress on the extension of the road from Jefferson to Rockwell in Calhoun County, a distance of 33 miles.

Detroit, Butler & St. Louis.—This company has been consolidated with the Wabash, St. Louis & Pacific, and the necessary articles have been filed in Indiana and Michigan. The road was built for the Wabash, with the intention of consolidating as soon as it was completed.

Dominion Air Line.—This company is formed to build a railroad from Montreal to Detroit by way of Smith's Falls and Perth, the route being north of the Grand Trunk.

East Tennessee, Virginia & Georgia.—Failing to secure the Cincinnati Southern, this company has, it is

stated, made an agreement with the Kentucky Central for the completion, as soon as possible, of the connection between the two roads by the extension of the Central south to the Tennessee line, and of the Knoxville & Ohio north to the same point. Contracts for these extensions were let some months ago and work has already been begun. It is expected that the connection can be completed by July next.

Grand Trunk.—Grading is in progress at several points between Montreal and Sarnia for a second track. The company apparently means to lay long sections here and there as passing places, connecting them hereafter.

The Victoria Bridge over the St. Lawrence, at Montreal, is being repaired and repainted, and the floor renewed.

Hannibal & St. Joseph.—The "corner" on the New York Stock Exchange, by which the common stock of this company was forced up to over \$200, has got into the courts, as corners are apt to do. Several suits have been begun against the parties in the pool who made the corner, and one suit has been commenced to compel the company to issue stock in exchange for its convertible bonds. The litigation will probably last some time.

Illinois Central.—This company's statement for August shows the earnings of its lines as follows:

	1881.	1880.	Increase.	P. c.
In Illinois.....	\$649,984.00	\$594,945.98	\$55,038.02	9.2
In Iowa, leased lines.....	182,402.00	137,808.71	44,593.29	32.3
Total.....	\$832,386.00	\$732,754.69	\$99,631.31	13.6

During August, 1881, the land sales were 1,376.93 acres for \$7,224.32, and the cash collected on land contracts was \$8,301.18.

Kent Northern.—Grading is nearly finished on this road from the junction with the Intercolonial near Weldford, N. B., to Richibucto, 18 miles. Tracklaying is in progress, and nine miles have been laid.

Louisville & Nashville.—This company has decided to complete the rail connection between the Evansville, Henderson & Nashville and the St. Louis divisions, which are now connected only by a steamboat transfer. The bridge will cross the Ohio at Henderson, Ky., and work upon it will be begun as soon as the government engineers have examined and approved the location. In addition to the bridge about 10 miles of road will have to be built from Evansville down the river on the Indiana side to the end of the bridge.

Maine Central.—The following excellent order has been issued by the Superintendent of this road: "In loading cattle you will be particular to see that the following instructions are strictly observed: There must be no larger number of cattle loaded in one car than can be so loaded as not to be crowded. The shipment of calves and their mothers among other cattle must not be permitted. If loaded in the same car with other cattle, shipper must pen off the calves, together with their mothers, from the other cattle. Calves and their mothers must not be separated. Calves shipped with their mothers must not be mixed. All cars in which cows and young calves are loaded must be bedded by the shipper with straw or hay."

Marietta & Cincinnati.—At Chillicothe, O., Sept. 8, in the Ross County Court, in the foreclosure proceedings against this road, a motion was made on the part of the Baltimore & Ohio for the appointment of a receiver in the place of John King, Jr., resigned. The Baltimore & Ohio was represented by Mr. Cowen and other counsel, and urged the appointment of Mr. Stewart, the present Superintendent of the road under Mr. King. This appointment was very sharply opposed by counsel for the Bondholders' Committee and the trustees of the respective mortgages. The Court decided that it would not appoint a receiver in the interest of the Baltimore & Ohio. It declined to appoint Mr. Stewart and stated that the Baltimore & Ohio interest must agree with the opposing counsel upon a nominee or that it would itself appoint. It is expected the appointment will be made either by agreement or by the Court.

Mexican Pacific.—This company has been organized under the laws of New York for the purpose of constructing, maintaining and operating in the Republic of Mexico, pursuant to a concession by that country to General John B. Frisbie, June 22, 1881, a railroad and a line or lines of telegraph along such line of railroad, and to connect with such other lines as may be deemed advisable; also such lines of steamboats or sailing vessel, as may be proper or convenient for use in connection with the railroad. The organization is for ninety-nine years. The railroad is to run from the city of Guaymas, state of Sonora, to points on the Pacific Coast mentioned in the concession by Mexico to Francis Delpress, representing the International Railway Improvement Company, and to General U. S. Grant, representing the Southern Mexican Railway Company, and touching at such intermediate ports on the Pacific Coast as may seem advisable. The terminal points are Guaymas, Sonora, Tehuantepec and Oaxaca, passing through the said states and the intermediate states of Sinaloa, Jalisco, Michoacan and Guerrero. The capital stock of the company shall be \$10,000,000, divided into 100,000 shares of \$100 each. The office of the company will be in New York.

Missouri Pacific.—The following is this company's statement for the quarter ending Sept. 30:

	Gross earnings.	Net earnings.
July.....	\$568,506.90	\$284,046.15
August.....	698,377.30	349,188.65
September.....	700,000.00	350,000.00
Total.....	\$1,966,884.20	\$983,234.80
Dividend, Pacific R'y Improvement Co.....		941,250.00
Total.....		\$1,924,484.80
Interest and rentals.....	\$382,775.00	
Dividend, 1½ per cent.....	446,074.50	
		828,849.50

Balance, surplus.....\$1,095,635.30

September earnings and expenses are estimated. The August expenses are also evidently estimated.

Natchez, Jackson & Columbus.—Track on the extension of this road is now laid for nine miles northeast from the late terminus at Martin, making the road 52 miles long from Natchez. The rest of the line to Jackson, 43 miles, is under contract.

New Brunswick.—The shops of this road at Gibson, N. B., were destroyed by fire early on the morning of Sept. 8. The buildings were destroyed and most of the tools ruined. The loss is estimated at from \$75,000 to \$100,000, on which there is some insurance. The loss is particularly unfortunate just now, when the company is busy preparing for a change of gauge.

New York, Lake Erie & Western.—The Buffalo Express says: "Rapid progress is being made in the construction of the new freight yard of the Erie Railway at East Buffalo by the contractors, Messrs. Craigie, Rafferty & Yeomans. Accompanied by Mr. Haven, of the railway company, a representative of the Express lately inspected

the work. The track extension will, when finished, amount to some 50 miles of new sidings, and is calculated to meet a double want of the road. At present the switch system is a loose-jointed, unhandy tangle that involves great waste of time and frequent blockades, which are expensive as well as vexatious. It is proposed to so regulate matters by the new system that the 80 switch engines now employed will be reduced to about one-fourth that number, without lessening the amount of work done. That such an advantage is well worth outlay cannot be disputed. The track extension begins just east of the Buffalo, New York & Philadelphia crossing of the Erie road, and extends some two miles eastward, about 50 rods beyond the city limits. Within these boundaries the Niagara Falls Branch joins the main line, and in the angle made the new freight transfer house is to be built, the foundations for which have already been started.

"The building will be some 900 ft. long and is estimated to cost \$12,000. A passenger station will also be put up, which will cost some \$8,000. The main line road-bed is to be transferred some distance to the northward, and will, for a great part, lie close to the south side of William street. The Falls Branch is to be double-tracked to Black Rock. The company's yards at this point have been greatly extended and improved, and a new freight depot has been built. The over-head trestle that the Falls Branch uses for crossing the Central tracks will be considerably improved. Two double-track iron bridges and 200 feet of iron trestle will be built, and the rest of the trestle will be filled up. This will give the Central company the extra space needed below.

"The old road trestle, which was partly destroyed by fire last Thursday night, is to be replaced by a new one already built just east of the Williamsville road. The greatest breadth, north and south, of these improvements is perhaps 60 rods, including occasional gaps."

New York, Susquehanna & Western.—This company has issued the following circular:

"The Midland Railway Company of New Jersey having been merged into and become a part of the New York, Susquehanna & Western Railroad Company, said company offers to the holders of the junior securities of the Midland Railroad Company of New Jersey the opportunity of exchanging their several securities into its common capital stock, upon the following basis: Income bonds, class A, to be exchangeable into common stock, dollar for dollar; income bonds, class B, to be exchangeable, at par, into the common stock, by the payment of 5 per cent. assessment thereon; scrip No. 1 to be exchangeable, at par, into the common stock, by the payment of 7½ per cent. assessment thereon; Scrip No. 2 to be exchangeable, at par, into the common stock, by the payment of 10 per cent. assessment thereon. All holders of junior securities who are desirous of exchanging the same, can do so on or before Oct. 1, 1881, by presenting their several securities at this office."

Certificates of stock are now ready for delivery. It is said that the income bondholders are not generally making the exchange, preferring to retain their present securities, such as they are.

Ohio & Mississippi.—Receiver King's statement for August is as follows:

Cash on hand Aug. 1.....	\$29,147.72
Receipts from all sources.....	497,723.14
Total.....	\$526,870.86
Vouchers, pay-rolls and arrearages.....	440,267.50

Cash on hand, Sept. 1.....\$86,603.36

The receipts exceeded the disbursements by \$57,455.64 for the month.

In the United States Circuit Court in Cincinnati, Sept. 8, a petition was filed by Thomas Pearsall and Henry G. Chapman, of New York, through their counsel, praying for the appointment of a receiver of the road in place of John King, Jr., resigned. Mr. Pearsall sues in his own behalf and on behalf of the company's stockholders, while Mr. Chapman represents several thousand shares held by himself and foreign stockholders. The petition, after alleging its several grounds for action, states that although the original suit was brought five years ago, no final decree has ever been taken or even asked for, and that it is evidently the interest of the parties now in control to preserve the situation as long as possible. The petition states that there should be entire independence in the future administration of this property to the end that the early reorganization of its affairs may be promoted, and prays that some proper person be appointed receiver, who is not in the employ of the present receiver, or of the Marietta & Cincinnati or Baltimore & Ohio railroads, or under their influence.

Argument was begun on the petition before the Court on Sept. 12. Counsel for the Receiver produced the original of a telegraphic letter sent by Mr. King to Judge Drummond referring to this petition, and saying that as he considered the petition raised grave charges against his administration of the office of receiver, and as he had received his appointment from Judge Drummond, he would now ask to withdraw his resignation as receiver and ask an early and exhaustive investigation of his administration.

Judge Matthews said this letter took the case at once out of Court, as Mr. King certainly had a right to withdraw his resignation and ask an investigation. The petition was therefore withdrawn and the court adjourned.

Pittsfield & Williamstown.—The capital stock of this road—\$600,000—has all been subscribed, and the company will be organized at once. The line has been surveyed from Pittsfield, Mass., to Williamstown, and is 25 miles long. A large part of the work will be light, and the heaviest grade will be 63 ft. to the mile, between New Ashford and Williamstown.

Pullman's Palace Car Co.—At the annual meeting in Chicago, Sept. 8, the stockholders voted to authorize an issue of new stock to the amount of \$2,018,000, being 25 per cent. of the present amount. The company gives notice that stockholders of record at date of this meeting (the transfer books having been closed Sept. 3) have the option until Oct. 15, 1881, to subscribe for such stock at par to an extent not exceeding one-fourth of their holdings. Payments to be made as follows: 50 per cent. on or before Oct. 15, 1881, for which receipts will be given, and 50 per cent. on or before Nov. 16, 1881, at which latter date certificates for full-paid stock will be issued. Blank forms of subscription and all information relating thereto may be obtained from the New England Trust Company in Boston, the Farmer's Loan and Trust Company in New York, or at the Company's office in Chicago.

Rostraver.—This company has been organized to build a railroad from Belle Vernon, in Fayette County, Pa., east to the Youghiogheny River, at the mouth of Big Sewickley. The distance is 10 miles, through a coal country.

Seaboard & Raleigh.—A contract has been let for the building of this road from Raleigh, N. C., by Tarboro to Williamston, 97 miles, and work will soon be begun. The line from Tarboro to Williamston was partly completed 10 or 12 years ago, but has never been worked.

Sierra & Quincy.—This company has filed articles of incorporation to build a railroad from Quincy in Plumas County, Cal., by the Sierra and Mohawk valleys and Beckwith Pass to Reno, Nev., with a branch to the Sierra iron mines. The road will be about 100 miles long, and it is proposed to make it of 2 ft. gauge.

Sioux City & Pacific.—Work is progressing actively on the extension of the Nebraska Division, and last week track had been laid 12 miles westward from the late terminus at O'Neill, Neb., making 52 miles beyond last year's terminus at Neligh.

South Chicago.—This company has filed articles of incorporation to build a branch from the Illinois Central at a point between Hyde Park and Grand Crossing to South Chicago. The incorporators are W. R. Ackerman, B. F. Ayer, John Dunn, E. T. Jeffrey, Wm. J. Maurice and J. C. Welling, all of whom are officers of the Illinois Central.

Southern Pacific.—Track on the extension of this road is now laid from El Paso, Tex., southeastward down the Rio Grande 100 miles, and work is progressing steadily. A large force of Chinamen is employed.

Texas & Pacific.—Track on the Rio Grande Division is progressing steadily, and the end of the track is now 450 miles west from Dallas and 670 miles from Texarkana. The end of the track is about 150 miles from El Paso, and trains will hardly reach that place this year.

Topeka & Rich Hill.—This company has been organized to build a railroad from Topeka, Kan., southeast through Ottawa and Ossawatimie to Pleasanton, and thence east to Rich Hill, Mo., the centre of the Bates County coal fields. The road will be about 110 miles long.

Train Robbery in Missouri.—On the night of Sept. 7 an express train on the Chicago & Alton road was stopped at a place four miles from Independence and 14 miles from Kansas City by a gang of armed and masked men, who boarded it and robbed the express car and the passengers. The place chosen for the robbery was in a dense wood, two miles from any dwelling. The robbers had placed obstructions on the track, and one of their number went forward with a red light and warned the engineer. When the train was brought to a standstill, twelve or sixteen men, armed with Henry rifles and revolvers, stepped from the woods and ordered Messenger Fox to open the express car. He refused and along with the train hands made a show of resistance, but they were quickly overpowered. The robbers beat Fox so badly that he will probably die. Afterward they went through the cars and robbed the passengers of money and jewelry, compelling the ladies to sit on the floor while they took off their earrings and brooches. In less than fifteen minutes they had completed their work, and after assisting the train hands to remove the obstructions they mounted their horses and rode off. The train ran into Kansas City and gave the alarm. Chief of Police Speers started out at once with 50 men on horseback, and a special train with a posse under Marshal Murphy was sent to the scene of the robbery. Large bodies of men have been sent out from different points surrounding the scene of the robbery. The whole country is aroused, and intense excitement prevails. The leader of the party answers the description of the man who led the men that robbed the Chicago & Rock Island train at Winston on July 17, last.

While the robbery was progressing a freight train was coming up behind, and Frank Burton, the brakeman, ran down the cut with a shower of bullets after him and stopped the train, thereby saving a collision.

The amount taken is not definitely known, estimates varying from \$5,000 to \$20,000. Rewards have been offered and several men have been arrested on suspicion of being concerned in the robbery.

Union Pacific.—The grading of the Oregon Short Line is now completed from Granger, Wyo., northwest 100 miles. Track has been laid for 25 miles from Granger, and the work is progressing, the intention being to iron 100 miles this fall, and to finish the road through to Portland, Or., next season.

Wagner Sleeping Car Co.—It is reported that this company is making arrangements to extend its lines largely, and that negotiations are in progress for running Wagner cars over the Gould southwestern lines. The company is also preparing to build large repair shops.

Western North Carolina.—A prolonged litigation over this road appears probable. It will be remembered that W. J. Best bought the road from the state of North Carolina, and, afterwards, in order to make the payments agreed on, he secured advances from parties interested in the Richmond & Danville road. Being unable to repay these advances, the road passed to the Richmond & Danville people. Mr. Best lately secured the charter of the Midland North Carolina for a road from Goldsboro to Salisbury, and secured a lease of the Atlantic & North Carolina, from Goldsboro to Morehead, and then set about recovering the Western road. He applied to the state commissioners appointed to see that the contract for the purchase of the Western road was carried out, and they made a contract to aid him in recovering the road, which was apparently a very strange proceeding for state officers whose duty was simply to see that the interests of the state were protected. A tender of repayment of the advances was made to the Richmond & Danville people, but they refused the money on the ground that the time specified for its payment had long passed. The commissioners then gave notice that the sale was forfeited and void, because the extension of the road had not been completed as fast as required, although they had previously voted to allow an extension of time (as they were authorized to do), and the state had failed to furnish as many convicts to work on the road as it had agreed to. The whole affair is a very pretty muddle as it stands.

Western Union Telegraph.—At the meeting of the board in New York, Sept. 14, the following statement was presented for the quarter ending Sept. 30, earnings for September estimated:

Balance, July 1.....	\$127,258.79
Net earnings for the quarter.....	1,949,894.61
Total.....	\$2,077,153.37
Interest on bonds.....	\$107,000
Construction and purchase of property.....	300,000
Sinking funds.....	20,000
	427,000.00

Balance, surplus.....\$1,650,153.37

On this statement it was resolved to pay the usual quarterly dividend of 1½ per cent., which will require \$1,200,000, leaving an estimated surplus of \$450,153.37 to the next quarter.

Winter's Gap.—This company has filed articles of incorporation in Tennessee for a railroad from a point on the proposed Knoxville & Cincinnati Southern in Roane County by Poplar Creek, to the foot of Big Brushy Mountain, in Anderson County. The object of the road is to reach coal deposits.